STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

BULLETIN NO. 66

QUALITY OF GROUND WATERS IN CALIFORNIA 1957

EDMUND G. BROWN
Governor

HARVEY O. BANKS
Director of Water Resources

APRIL, 1960

STATE OF CALIFORNIA

DEPARTMENT OF WATER RESOURCES

DIVISION OF RESOURCES PLANNING

BULLETIN NO. 66

QUALITY OF GROUND WATERS IN CALIFORNIA 1957

EDMUND G. BROWN
Governor

HARVEY O. BANKS
Director of Water Resources

APRIL, 1960

TABLE OF CONTENTS

*Ground water basin number; explanation on page four.

APPENDIXES

RVEY O. BANKS
DIRECTOR

EDMUND G. BROWN
GOVERNOR

ADDRESS REPLY TO
P. O. BOX 388 SACRAMENTO 2
1120 N STREET HICKORY 5-4711

STATE OF CALIFORNIA

Department of Water Resources

SACRAMENTO

April 11, 1960

Honorable Edmund G. Brown, Governor, and
Members of the Legislature of the
State of California

State and Regional Water Pollution Control Boards

Gentlemen:

I have the honor to transmit herewith a report on the quality of ground waters in California during calendar year 1957. This is the third in a continuing series of reports on the ground water monitoring program conducted by the Department of Water Resources.

Under this program, water samples from representative wells in ground water basins throughout the State are collected and analyzed, and an annual evaluation is made of ground water quality conditions.

This report covers the period from January through December, 1957, and includes mineral analyses of ground waters from 43 monitored areas in California. The reports on this program for the years 1958 and 1959 are in preparation and are scheduled for completion during 1960.

Very truly yours,

Harvey O. Banks

HARVEY O. BANKS
Director

ACKNOWLEDGMENTS

Field work for the statewide ground water quality monitoring program for 1957, reported herein, included collection of about 1,200 ground water samples from 43 monitored areas in California. The extensive coverage was made possible through the cooperation of the following agencies:

United States Geological Survey, Ground Water Branch

United States Geological Survey, Quality of Water Branch

Alameda County Flood Control and Water Conservation District

Monterey County Flood Control and Water Conservation District

San Bernardino County Flood Control and Water Conservation District

Del Norte and Humboldt County Farm Advisor

Kern County Farm Advisor

Madera County Farm Advisor

Mendocino County Farm Advisor

Siskiyou County Farm Advisor

Sonoma County Farm Advisor

Stanislaus County Farm Advisor

Orange County Air and Water Pollution Control District

San Joaquin Local Health District

California Water and Telephone Company, National City

Central California Irrigation District

Merced Irrigation District

Turlock Irrigation District

West Side Irrigation District

West Stanislaus Irrigation District

Many of the analyses presented in this report were made by the United States Geological Survey, Quality of Water Branch, at its Sacramento laboratory, under a continuing cooperative agreement with the Department of Water Resources.

The valuable assistance and cooperation of these agencies is gratefully acknowledged.

ORGANIZATION
STATE DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

Harvey O. Banks . . . . . Director of Water Resources

Ralph M. Brody . . . . . Deputy Director, Special Counsel

James F. Wright . . . . . Deputy Director, Administration and Management

William L. Berry . . . . . Chief, Division of Resources Planning

H. G. Dewey, Jr. . . . . Chief, Special Activities Branch

The activity under which this report has been prepared is directed by

Meyer Kramsky . . . . . Principal Hydraulic Engineer

The activities in northern California are under the supervision of

Willard R. Slater . . . . . Supervising Hydraulic Engineer

The activities in southern California are under the direction of

John R. Teerink . . . . . District Engineer

and the supervision of

David B. Willets . . . . . Supervising Hydraulic Engineer

This report was prepared by

Arthur J. Inerfield . . . . . Senior Civil Engineer
Robert F. Clawson . . . . . Senior Hydraulic Engineer
Eldon E. Rinehart . . . . . Associate Hydrographer

assisted by

Wayne S. Gentry . . . . . Associate Civil Engineer
Felix W. Cartier . . . . . Civil Engineering Associate
Eugene C. Ramstedt . . . . . Assistant Civil Engineer
Chester Lao . . . . . Assistant Engineering Geologist
Ralph Paul . . . . . Junior Civil Engineer
Edwin E. Crawford . . . . . Junior Hydrographer
Norman J. Scott, Jr. . . . . Engineering Aid II

---o---

Paul L. Barnes . . . . . Chief, Division of Administration
Porter A. Towner . . . . . Chief Counsel
Isabel C. Nessler . . . . . Coordinator of Reports

ORGANIZATION

CALIFORNIA WATER COMMISSION

James K. Carr, Chairman, Sacramento

William H. Jennings, Vice Chairman, La Mesa

John W. Bryant, Riverside

John P. Bunker, Gustine

Ira J. Chrisman, Visalia

George C. Fleharty, Redding

John J. King, Petaluma

Kenneth Q. Volk, Los Angeles

Marion R. Walker, Ventura

George B. Gleason
Chief Engineer

William M. Carah
Executive Secretary

SUMMARY OF CONDITIONS
1957

Degradation by sea-water intrusion into coastal basins continued to be the major threat to quality of ground waters in California during 1957. Sea-water intrusion was evidenced by increased mineralization in ground water in the following areas: Santa Clara Valley, Pajaro Valley, Salinas Valley, Oxnard Plain, West Coast Basin, East Coastal Plain, San Luis Rey Valley, and Tia Juana Basin. In several other basins, significant increases or decreases in mineral concentration were noted in individual wells. However, these changes appear to be due to localized conditions and do not necessarily reflect basin-wide water quality trends. Ground water quality in the majority of the monitored areas, including the vast Central Valley Region, remained essentially unchanged from that found in 1956.

THE GROUND WATER QUALITY MONITORING PROGRAM

About one-half of California's presently developed water supply is derived from ground water storage. The consequent widespread dependence upon ground water as a source of supply, together with the recognized need for more intensive utilization of ground water storage to meet future water requirements, demands constant vigilance, coupled with remedial action where necessary, to assure that the quality of ground water remains suitable for all intended uses. Accordingly, a statewide program of observation and compilation of records of ground water quality was initiated in 1953.

Presented in this report are the analyses and evaluations of samples collected during 1957. Data for previous periods are included in the following reports: California Department of Public Works, Division of Water Resources, Water Quality Investigations, Report No. 14,

"Ground Water Quality Monitoring Program in California", Progress Report 1953-1954; and California Department of Water Resources, Division of Resources Planning, Bulletin No. 66, "Quality of Ground Waters in California, 1955-1956."

The ground water quality monitoring program is authorized by Section 229 of the Water Code. This section provides that:

> "The department (of Water Resources) ... shall investigate conditions of the quality of all waters within the State, including saline waters, coastal and inland, as related to all sources of pollution of whatever nature and shall report thereon to the Legislature and to the appropriate regional water pollution control board annually, and may recommend any steps which might be taken to improve or protect the quality of such waters."

The objectives of the program are:

(1) To provide information on the prevailing mineral quality of ground waters.

(2) To provide a reliable continuing check on quality of ground waters.

(3) To secure data relating to significant changes in mineral quality, to evaluate the causes for these changes and to identify and delineate the areas affected by such changes.

(4) To notify the appropriate regulatory agencies regarding the findings of the program.

(5) To provide the required data on ground water quality for the purpose of water development planning and construction.

During 1957, water samples were collected and analyzed from 43 ground water basins or portions of basins in California. Requests and suggestions from regional water pollution control boards and other interested water agencies were considered in selecting areas for monitoring.

Monitored areas are divided into the following broad categories: areas where water quality problems are known to exist; areas where extensive use is made of the ground water resources and where there are potential water quality problems; and areas in which ground water is not presently used extensively, but it is desirable to secure data on native water quality conditions in anticipation of future development.

Frequency of sampling depends largely on the nature and imminence of the quality problem. Only a minimum number of wells necessary to delimit accurately the problem or to evaluate ground water conditions are included in the monitoring network. The selection of wells is also governed to a large extent by the availability of well logs and accessibility of wells for sampling. Sufficient information must be available on each well such as depth, aquifers encountered, and depths of perforations to assure that data obtained are useful. (In 1958, the program was expanded to include radiological determinations in addition to the usual mineral analyses in all of the monitored areas. This will provide background information for evaluation of the effects of the ever-increasing uses of radioactive materials.)

The information presented for each monitored area includes a general description of the area, an evaluation of water quality problems, the number of wells sampled, the frequency of sampling, and an evaluation of the data collected during the reporting period.

A tabulation showing the number of wells sampled in each area in 1957, and the sampling times, as well as a summary of information pertaining to occurrence, development, and use of ground water for each of the monitored areas is presented in Appendix A.

To facilitate geographical orientation, the areas are grouped by water pollution control regions, the boundaries of which, in most cases,

coincide with those of the major drainage basins of the State. These regional boundaries and the areas included in this monitoring program are shown on Plate 1.

The region and basin numbers in this report are based on a decimal system in the form x-xx.xx. The number to the left of the dash refers to the region of a water pollution control board. On the right of the dash, the first digits refer to the basin, valley or area; and the digits to the right of the decimal refer to the sub-basin number. A letter is also used following the first digits to the right of the dash to identify portions of ground water basins within a county. These numbers are used to identify the monitored areas in the text, in the data tables, and on Plate 1.

The location of the monitored wells and other data thereon, together with an explanation of the well numbering system, is presented in Appendix B. Ground water analyses obtained during 1957 are presented in Appendix C by monitored areas. Also included in Appendix C are discussions of laboratory methods and procedures and criteria for appraising the suitability of water for various uses. A "monitored area" is defined as that portion of a ground water basin which lies within the limits of an established network of monitored wells. It does not necessarily include the entire ground water basin.

QUALITY OF GROUND WATERS IN CALIFORNIA, 1957

NORTH COASTAL REGION (No. 1)

The North Coastal Region comprises all of the basins draining into the Pacific Ocean from the California-Oregon state line southerly to the northern boundary of Lagunitas Creek drainage area in Marin County (Plate 1). It extends approximately 270 miles from north to south, ranges in width from 180 miles at the Oregon boundary to about 30 miles in the southern portion, and encompasses an area of about 19,000 square miles.

All or parts of ten ground water basins in the North Coastal Region have been included in the ground water quality monitoring program. Of these, Smith River Plain, Ukiah Valley, and Sanel Valley have been reported previously. Butte Valley, Shasta Valley, Scott River Valley, Mad River Valley, Eel River Valley, Alexander Valley, and Santa Rosa Valley were added to the program in 1957.

Smith River Plain (1-1)

Smith River Plain is located adjacent to the coast in the northwestern portion of Del Norte County. The plain extends approximately 18 miles north to south, varies in width from about four to seven miles, and encompasses an area of about 70 square miles. It is the largest alluvial area in the county.

The mineral quality of ground water in Smith River Plain is generally good, and no major problems presently exist. However, there are several potential sources of ground water degradation. Among these are a threat of sea-water intrusion along the coast, encroachment of brackish water from Lake Earl, and possible local contamination from septic tanks in the vicinity of Crescent City. Monitoring of the area on an annual basis was initiated

in 1956. The monitoring network in Smith River Plain consisted of 15 wells in 1957.

Ground waters of Smith River Plain are generally a magnesium bicarbonate type of excellent mineral quality. However, minor increases in nitrates and total dissolved solids occurred in several of the monitored wells in 1957. The most notable increase occurred in well 16N/1W-20A2, located approximately one mile north of Crescent City. The nitrates in this well increased from 19 to 48 parts per million (ppm) between December, 1956, and December, 1957, and the total dissolved solids showed an increase from 108 to 166 ppm during the same period. This increase cannot be attributed to any specific source. However, because there have been instances of contamination by effluent from individual sewage disposal systems, any increases in nitrates in the area should be viewed with suspicion. It is anticipated that subsequent analyses may determine whether or not this increase indicates a definite trend. The mineral constituents in the other monitored wells showed little change during the same period. In general, total dissolved solids ranged from 57 to 182 ppm, and boron concentrations were less than 0.06 ppm. The sodium ratio varied between 8 and 51 per cent, and hardness from 18 to 121 ppm. Ten of the 15 monitored wells contained water with less than 67 ppm total hardness. See Appendix C.

Butte Valley (1-3)

Butte Valley lies in the northeastern part of Siskiyou County, about 30 miles south of the Oregon border and east of the Cascade Range. The valley floor is an irregularly-shaped area comprising approximately 130 square miles.

Ground water in Butte Valley is generally of the bicarbonate type,

with moderate mineral concentrations, although locally some wells produce water high in mineral content. These highly mineralized ground waters probably originate in buried playa deposits which occur in the east side of the valley. A monitoring program of ten wells was established in Butte Valley in 1957. These wells will be sampled annually to maintain a check on any movement of highly mineralized water into the good quality water.

The analyses for 1957 show that the waters from nine of the monitored wells were of excellent quality; total dissolved solids did not exceed 294 ppm, chlorides were less than 8 ppm, and hardness was less than 130 ppm. However, water sampled from well 47N/1W-23H1, one of the wells located in the eastern part of the valley, contained 2,670 ppm total dissolved solids, 979 ppm sulfates, 328 ppm chlorides, and 760 ppm total hardness, reflecting the presence of mineralized water discussed previously. The boron content of water from this well was 1.5 ppm, while boron content of water sampled from the other wells did not exceed 0.17 ppm.

Shasta Valley (1-4)

Shasta Valley lies in the central part of Siskiyou County, between the Klamath Mountains on the west and the Cascade Range on the east. The valley is nearly oval in shape, has a north-south length of about 30 miles, a maximum east-west width of about 15 miles, and includes an area of approximately 250 square miles.

The ground waters in Shasta Valley are generally of excellent mineral quality, with bicarbonate the dominant anion. No extensive ground water quality problems are known to exist. However, waters high in sodium, boron, and potassium are found at some points in the northwestern portion of the valley. The presence of these highly mineralized waters, probably due

to the migration of poor quality waters known to be present in certain geologic formations in the area, prompted the establishment, in 1957 of a monitoring network of six wells in this area which were sampled twice during the year (Appendix A).

The analyses of samples from the monitored wells indicate that the ground waters were generally of good mineral quality in 1957, although most of the waters were hard. Total hardness varied from 95 to 376 ppm, with four of the six wells having hardness in excess of 230 ppm. The highest boron concentration, 1.2 ppm, occurred in the water from well 44N/4W-6M1, located in the northeast portion of the valley. Per cent sodium ranged from 7 to 45, and total dissolved solids ranged from 162 to 594 ppm, with the highest concentration in water from well 44N/5W-32F1 near the center of the area.

Scott River Valley (1-5)

Scott River Valley is located in the western portion of Siskiyou County, and lies about 28 miles south of the California-Oregon boundary. The valley has a north-south length of 22 miles, a maximum width of about 10 miles, and comprises an area of approximately 80 square miles.

The ground waters of Scott River Valley are generally of excellent mineral quality and are suitable for most beneficial uses, although most are moderately hard. In 1957, an annual monitoring network of four wells was established to detect any change in water quality.

The analyses of ground water samples collected during 1957 show that the total dissolved solids did not exceed 275 ppm, chlorides were less than 6 ppm, and boron did not exceed 0.13 ppm. Three of the sampled wells yielded waters which were moderately hard with total hardness less than 185 ppm. The fourth well contained water with a total hardness of 233 ppm.

Mad River Valley (1-8)

Mad River Valley lies north of Humboldt Bay in Humboldt County, and is bordered on the north and east by the Coast Range, and on the west by the Pacific Ocean. The monitored portion of the valley is roughly rectangular in shape, averages about six miles in a north-south direction, and extends inland from the coast an average of about three miles.

Ground waters in Mad River Valley are characteristically a magnesium bicarbonate type suitable for most beneficial uses. However, there are indications that sea-water intrusion may exist in the coastal segment of this valley. A monitoring program of six wells was established in 1957 to maintain a check on the occurrence of sea-water intrusion and the quality of ground waters in the basin. In this first year, samples were collected in February and December. In subsequent years, samples will be collected annually.

Wells 6N/1E-7M1 and 6N/1E-18J1, located in the central portion of the monitored area, produced hard water in December, 1957, with total hardness of 252 and 233 ppm, respectively. Well 6N/1W-1P1, located near the mouth of Mad River and on the fringe of the area susceptible to sea-water intrusion, showed an increase in total dissolved solids from 2,710 ppm in February, 1957, to 4,480 ppm in December, 1957. Chlorides increased from 1,460 to 2,520 ppm during the same period. This well is no longer used for domestic and irrigation purposes, but is still being used to supply washdown water for a dairy. Several wells in the area just south of the mouth of Mad River have been abandoned, possibly due to intrusion of sea water. These high chloride ground waters occur in an area about three-quarters of a mile in length, extending about one-half mile inland from the coast line.

Eel River Valley (1-10)

Eel River Valley is the largest valley fill area in Humboldt County. The monitored portion of Eel River Valley is about 8 miles wide at the coast, extends inland about 12 miles to the confluence of the Eel and Van Duzen Rivers, and includes an area of about 75 square miles.

The ground waters of this area are generally hard, but are suitable for most uses. A seaward hydraulic gradient exists over the entire basin most of the year. Heavy pumping occurs during the summer season and lowers the water table below sea level over an extensive area. When this condition exists, saline water from the tidal portion of Eel River may enter and degrade fresh-water bearing deposits. To maintain continuous observation on the quality of ground water in this area, an annual monitoring network of 11 wells was established in 1956. To obtain more complete information, four of the wells were sampled twice during 1957.

The analyses of samples from these wells in 1957 show total dissolved solids ranging from 84 to 842 ppm, with the highest concentration in well 3N/2W-13J1, located one mile south of Loleta. Wells near to and west of the Eel River yielded moderate to hard waters, with the hardest waters being found in wells closest to the river. Total hardness ranged from 34 ppm in well 3N/1W-18D2, to 630 ppm in the aforementioned well 3N/2W-13J1. Sodium percentage ranged from 7 to 60, with 7 wells containing 30 per cent sodium or less. Boron did not exceed 0.33 ppm in any of the monitored wells. Chloride concentrations near the coast, and in the vicinity of the tidal portion of Eel River, were much higher than those generally found in the rest of the valley. Well 3N/2W-35M1, located approximately $3\frac{1}{2}$ miles from the coast and 2 miles south of the river, contained 172 ppm chlorides in December, 1956, and 310 ppm chlorides in October, 1957.

North of the Eel River, ground water from well 3N/2W-13J1, located about three miles inland, had a chloride concentration of 390 ppm. Well No. 3N/1W-29C1 located about six miles inland from the coast produced water containing 63 ppm chlorides.

Ukiah Valley (1-15)

Ukiah Valley comprises about 65 square miles of alluvial fill area along the Russian River in the east-central portion of Mendocino County. The valley is approximately 22 miles in length, and varies in width up to 5 miles.

Highly mineralized ground waters occur along the eastern edge of the valley, probably originating from mineralized springs in the area. The importance of the ground water supply to the economy of this area prompted the establishment of a monitoring network in 1953. The network comprised 11 wells in 1957 which were sampled annually.

Water samples from nine of the eleven wells showed little evidence of progressive change in mineral concentration. However, the quality of waters from the remaining two wells, 15N/12W-8D1 and well 17N/12W-18A1, fluctuated considerably. Waters from well 15N/12W-8D1, located about two miles north of Ukiah, indicated a cyclic variation in mineral constituents; total dissolved solids decreased from 235 ppm in August, 1953, to 111 ppm in December, 1956, then increased to 240 ppm in August, 1957. Waters from well 17N/12W-18A1, located in the northern portion of the valley about seven miles north of Calpella, decreased in total dissolved solids content from 1,120 ppm in December, 1956, to 1,080 ppm in August, 1957; during this same period, boron concentration decreased from 73 to 45 ppm.

Per cent sodium in the monitoring wells ranged from 14 to 85, with the highest value from well 17N/12W-18A1. Well 14N/12W-5K1, located

approximately three miles south of Ukiah, had a total hardness of 246 ppm, while hardness in the other monitored wells ranged from 90 to 164 ppm. Boron, in concentrations exceeding the limits recommended for irrigation use, was present in waters from wells 14N/12W-26K1 and 17N/12W-18A1.

Sanel Valley (1-16)

Sanel Valley is an irregularly shaped area located in the southeastern portion of Mendocino County. It is traversed by the Russian River in a north-south direction and comprises an area of about 11.5 square miles.

Ground waters in Sanel Valley are characteristically magnesium-calcium bicarbonate in type, and are generally suitable for most beneficial uses. However, ground waters in portions of the area contain high boron concentrations. Due to the importance of ground water supplies to the economy of this valley, and the presence of boron in excessive quantities, an annual monitoring network of six wells was established in the area in 1956.

A comparison of mineral analyses of samples collected in 1957 with those collected in 1956 indicates no significant changes in nature or concentration of mineral constituents. Total dissolved solids in ground water samples collected in Sanel Valley ranged between 152 and 235 ppm. Boron concentration was 1.5 ppm in well 13N/11W-18D1, and 1.2 ppm in well 13N/11W-18B1, both of which are located approximately 1.5 miles north of Hopland, but did not exceed 0.52 ppm in the other monitored wells. Sodium did not exceed 22 per cent of the base constituents in any of the waters sampled

Alexander Valley (1-17)

Alexander Valley lies along the Russian River in the north-central

portion of Sonoma County. The monitored area has a length of approximately 14 miles, an average width of about 1.5 miles, and comprises about 20 square miles.

Ground water in Alexander Valley is generally of low mineral content and suitable for most beneficial uses; however, waters high in boron occur in local areas throughout the valley. Disposal of winery waste water into unlined ponds is a potential source of degradation of ground water in the northern portion of Alexander Valley. To determine whether any impairment of ground water quality is occurring, an annual monitoring network of nine wells was established in 1957.

A study of analyses of water samples collected from monitored wells indicates that in 1957, ground water varied considerably in mineral characteristics. Sodium percentage ranged from 8 to 84. Well 10N/9W-32R1, located approximately 1.5 miles southeast of Geyserville, yielded water with 492 ppm total dissolved solids, the highest value for any of the monitored wells in this valley. Three of the nine monitored wells yielded ground water with total hardness above 200 ppm. Boron content was 1.8 ppm in wells 10N/9W-18R1 and 11N/10W-33A1, and 1.3 ppm in well 9N/9W-1P1. Boron did not exceed 0.28 ppm in water from the other wells.

Santa Rosa Valley (1-18)

Santa Rosa Valley is the largest and most important valley fill area in Sonoma County. This monitored area comprises about 90 square miles, has a length of about 20 miles, and a width of 4 to 7 miles. Bennett, Rincon, and Kenwood Valleys, which lie east of Santa Rosa Valley, are also included in this monitored area.

The quality of ground water in Santa Rosa Valley is generally satisfactory for most uses. However, high concentrations of boron occur

locally, and sodium percentages in some waters are in excess of those recommended for irrigation use. An annual monitoring network of 20 wells was established in this area during 1957 to maintain a check on the water quality and to detect any changes.

Mineral analyses of ground water samples collected from monitored wells in 1957 show a concentration of total dissolved solids ranging from 127 to 354 ppm in all wells except 6N/7W-18R1, located approximately four miles south of Santa Rosa, which had a total dissolved solids content of 645 ppm. Per cent sodium was 91 in well 6N/7W-17E1, but did not exceed 63 per cent in water from the remaining wells. The highest concentration of boron, 1.2 ppm, was found in water from well 6N/7W-17E1. Boron did not exceed 0.23 ppm in the other wells sampled. Total hardness ranged from 20 to 168 ppm, except for well 6N/7W-18R1, where hardness was 426 ppm.

SAN FRANCISCO BAY REGION (No. 2)

San Francisco Bay Region includes all of the basins which drain into San Francisco Bay, San Pablo Bay, and that portion of Suisun Bay below Antioch. It includes parts of Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara and San Mateo Counties, and all of San Francisco County. The region extends about 125 miles from north to south, averages 45 miles in an east-west direction and comprises an area of about 4,400 square miles (Plate 1).

Within the boundaries of the San Francisco Bay Region, 11 major ground water basins have been identified. As of 1957, two of these basins, Santa Clara and Livermore Valleys, were included in the ground water quality monitoring program. For purposes of discussing ground water quality, Santa Clara Valley has been divided into two areas, East Bay and South Bay.

Santa Clara Valley, East Bay Area (2-9a)

The East Bay Area of Santa Clara Valley in the monitoring program comprises about 140 square miles of alluvial land in Alameda County, between San Francisco Bay and the foothills of the Diablo Range. The area extends northerly from the Alameda-Santa Clara County line about 40 miles and ranges in width from 2 to 11 miles.

The ground water reservoir formed in alluvial material which has been deposited by Alameda Creek between Niles and the San Francisco Bay is termed the Niles cone. Because of prolonged overuse of ground water supplies, the water table has been lowered below sea level for many years and saline bay waters have invaded shallow water-producing gravels. In recent years, saline waters have been detected in deeper water-producing gravels which are separated from the shallower zones by extensive clay layers. To maintain surveillance on the quality of ground water in the

area subject to sea-water intrusion, a program was established in 1953 to monitor the upper and the lower aquifers. The monitoring network in 1957 consisted of 15 wells sampled twice a year.

Analyses of samples collected from the monitored wells show that chloride concentrations in well 4S/1W-30K3, which is located near Centerville and penetrates the lower aquifer, increased from 352 ppm in 1953, to 1,940 ppm in 1957. Water from well 4S/1W-29M1, located about 0.3 mile south of Centerville, and drawing from the upper aquifer, had a chloride concentration of 1,355 ppm in 1957, an increase of 1,117 ppm since 1953. This increase indicates that the inland advance of sea water is continuing. A chloride concentration of 564 ppm in well 3S/2W-32R1, located about four miles south of Hayward, indicates possible sea-water intrusion in the upper aquifer in that area.

The 1957 analyses show the following ranges in constituents: chlorides, from 27 to 1,940 ppm; total dissolved solids, from 229 to 3,510 ppm; boron, from 0.14 to 0.83 ppm; and per cent sodium, from 14 to 64. Nitrate concentrations of 71, 72, and 82 ppm were found in waters sampled from wells 3S/3W-3L1, 2S/3W-36M1, and 3S/2W-21F1, respectively. The first two wells are located in San Leandro and the third in Hayward. The sources of these nitrates are not known.

The status of sea-water intrusion in the East Bay Area of Santa Clara Valley is shown on Plate 2.

Santa Clara Valley, South Bay Area (2-9b)

The South Bay Area of Santa Clara Valley included in the monitoring program lies within Santa Clara County and extends from Palo Alto southerly to San Jose. The monitored area is about 10 miles north to south, approximately 15 miles east to west, and contains about 150 square miles.

Ground waters in the South Bay Area are threatened by sea-water intrusion which has existed in the tidelands area adjacent to San Francisco Bay for many years. In addition, ground waters in the Penitencia Creek area contain high boron concentrations. Due to the importance of ground water, and the presence of ground water quality problems, this area was included in the monitoring program in 1953 for continued observation. The 1957 monitoring network consisted of 17 wells sampled annually.

Comparison of mineral analyses of samples obtained in 1957 from the monitored wells shows that the only significant change in water quality was the increase in the chloride concentrations in wells 5S/3W-35G1 and 6S/1W-14L4. Chlorides in water from well 5S/3W-35G1, located about three miles south of the bay in Palo Alto, increased from 64 ppm in October, 1955, to 198 ppm in August, 1957. Chloride concentrations in water from well 6S/1W-14L4, located about two miles southeast of Alviso, increased from 31 ppm in October, 1955 to 139 ppm in August, 1957. It is believed that this chloride rise is due to sea-water intrusion. Well 6S/1W-14L4 yielded water with a total dissolved solids concentration of 1,110 ppm, which is the maximum value found in the monitored wells. Water from the remaining monitored wells was of good to excellent mineral quality, with 695 ppm being the maximum concentration of total dissolved solids. The maximum boron concentration in the wells sampled in 1957, was 1.0 ppm, with 12 of the monitored wells having concentrations less than 0.20 ppm. Per cent sodium ranged from 15 to 67, with only three of the monitored wells having a per cent sodium above 42. Most of the wells yielded very hard water, with total hardness ranging from 70 to 646 ppm.

Livermore Valley (2-10)

The monitored portion of Livermore Valley is located in the eastern

portion of Alameda County, with a minor area extending into Contra Costa County. The valley has an east-west length of about 14 miles, varies in width from 3 to 6 miles, and encompasses an area of about 50 square miles.

An annual monitoring program was established in 1953 due to the dependence of the area on ground water supplies, and the presence in the ground water of boron and nitrates in excessive quantities. In 1957, water samples were collected from 45 wells. In connection with a special study of the occurrence of nitrates in the valley, additional samples were collected from 36 of these wells.

In 1957, ground waters in the northeastern part of the valley contained chlorides ranging from 286 to 1,450 ppm. Boron ranged between 3.7 and 28 ppm, and sodium percentage ranged from 72 to 77. Chloride was the predominant anion in these waters, and total hardness was in excess of 170 ppm. Although the ground waters in this portion of the valley continued to be the poorest in mineral quality encountered in the monitored area, little change from previous analyses was noted.

Ground water in the central and southern portion of the valley contained total dissolved solids and boron concentrations of less than 560 and 0.92 ppm, respectively . In this portion of the valley total dissolved solids increased slightly over 1956 values.

Mineral concentrations varied in waters from wells in the vicinity of Livermore and the eastern part of the valley. Boron ranged from 0.11 to 6.5 ppm, with the highest concentration in wells located just south and east of Livermore. The highest concentration of total dissolved solids and boron was found in water from well 3S/3E-19C1, located about five miles southeast of Livermore. Sodium exceeded 50 per cent of base constituents in only two of the monitored wells in this part of the area. Nitrate concentrations in water from six of the monitored wells in the vicinity of Livermore

exceeded 44 ppm, the limiting value recommended by the California State Department of Public Health for domestic use, as presented in Appendix C.

No significant trends or changes were noted in mineral concentrations in comparison with previous analyses.

CENTRAL COASTAL REGION (No. 3)

The Central Coastal Region extends from the southern boundary of Pescadero Creek Basin in Santa Cruz County to the northeastern boundary of Rincon Creek Basin in Ventura County. The region is characterized by narrow coastal strips and coastal valleys with moderate slopes toward the ocean, backed by mountain ranges paralleling the coast. It averages 50 miles in width and encompasses an area of approximately 11,000 square miles (Plate 1).

Valley areas in the Central Coastal Region, except for a few isolated sections, receive moderate rainfall, and depend largely on ground water as a source of supply. Approximately 90 per cent of the water requirements of this region are supplied from ground water sources. Nineteen ground water basins, eighteen of which are utilized intensively to supply irrigation waters, have been identified in the Central Coastal Region. Five of these ground water basins have been included in the monitoring program.

Pajaro Valley (3-2)

Pajaro Valley comprises an irregularly shaped area of about 75 square miles lying in the Pajaro River drainage basin below Chittenden Pass.

Ground waters in Pajaro Valley occur in three distinct zones, designated, the shallow, intermediate, and deep zone. The shallow zone extends from land surface to a depth of about 100 feet. The intermediate zone lies between 100 and 300 feet and the deep zone occurs below 400 feet. Shallow zone ground water is often of poor quality. Ground water in the intermediate zone is generally suitable for most irrigation uses, and is the present main source of supply. The limited data available concerning water quality in the deep zone indicate it to be of excellent mineral quality. Sea-water intrusion into intermediate zone ground water adjacent to Monterey

Bay prompted the inclusion of Pajaro Valley into the monitoring program in 1953. Samples are collected on an annual basis; during 1957, 25 wells were sampled.

Ground waters in Pajaro Valley contain moderate concentrations of calcium and bicarbonates, low concentrations of magnesium, sodium and boron, and moderate to high total hardness. The presence of chlorides in significant amounts is limited to a zone adjacent to Monterey Bay.

Comparison of mineral analyses of ground water samples collected from wells in Pajaro Valley during 1957 with previous analyses revealed no significant change in quality of ground water. In the area north of the Pajaro River, sea water had intruded the intermediate zone for a distance of about one-half mile in 1957, and in the Springfield district, as far inland as McClusky Slough. The intrusion extended somewhat further inland along the Pajaro River. Well 12S/1E-24J2 located about one mile inland from the ocean showed a chloride concentration of 132 ppm. This well marks the approximate extent of sea-water intrusion. Wells 12S/1E-25B2 and 12S/1E-25C1, located about three-quarters of a mile inland from the ocean and within 1,000 feet of each other, draw from the deep zone, and in 1957 yielded water with chloride concentrations of 17 and 162 ppm, respectively. While the higher chloride concentration indicates that sea water may have intruded the deep zone, the chloride concentration in this well has not varied more than 5 ppm since 1955. Ground waters in the major portion of the valley contained total dissolved solids generally less than 400 ppm, boron concentrations less than 0.30 ppm, and per cent sodium less than 35. However, wells located in the eastern end of the valley yielded waters with boron concentrations less than 1.4 ppm, and total dissolved solids concentrations usually in excess of 650 ppm.

The status of sea-water intrusion in Pajaro Valley is shown on Plate 3.

Salinas Valley (3-4)

Salinas Valley is the largest valley in the Central Coastal Region. The monitored portion is approximately 40 miles in length, varies in width from 2 to 10 miles, and contains about 300 square miles of highly productive irrigated and dry-farmed land.

Ground waters in Salinas Valley occur principally in three aquifers. These consist of an upper unconfined aquifer and two lower confined aquifers known as the 180-foot aquifer and the 400-foot aquifer. A serious water quality problem exists, caused by the intrusion of sea water into overdrawn fresh-water aquifers in the portion of Salinas Valley adjacent to Monterey Bay. Two miles inland from the bay shore, ground water has been degraded to such an extent by saline water that it is either unfit for agricultural use, or is near the upper limit of quality suitable for such use. An annual monitoring program was established in this area in 1953, primarily for the purpose of monitoring sea-water intrusion into the 180-foot and 400-foot aquifers.

Samples were collected from 47 wells in this area during 1957. Comparison of mineral analyses of samples collected from monitored wells since 1953 shows that, except for a slight increase in chlorides in several of the wells, there was little change in quality characteristics during the period.

In the vicinity of Castroville, sea water had intruded inland about three miles in the 180-foot aquifer in 1957. The continued inland advance of sea water in the 180-foot aquifer is indicated by the increase of chlorides in some of the wells which pump from this zone. Chloride

concentrations in well 13S/2E-30L1, located about one-half mile from the coast, increased from 139 ppm in 1955 to 166 ppm in 1957. Chloride concentrations in well 13S/2E-32J1, located about one-half mile southwest of Castroville, and well 14S/2E-5R2 about two miles southwest of Castroville, which were 100 and 52 ppm, respectively, in 1953, increased to 495 ppm and 122 ppm in 1957.

Well 13S/2E-19R1, about a mile and a half northwest of Castroville, which pumps from the 400-foot aquifer, showed chloride concentrations of 154 ppm in 1956, and 236 ppm in 1957. This increase of chlorides in the 400-foot aquifer was not evidenced in samples from wells located south of Castroville. Well 13S/2E-31M2 in this area showed an 11 ppm decrease in chlorides during the same period. These changes suggest that the inland advance of sea water is continuing only in that portion of the 400-foot aquifer which lies directly west of Castroville.

Analyses of water from wells in the portion of Salinas Valley not subject to sea-water intrusion, however, indicate that the ground waters, while hard, are of excellent quality. Boron concentrations vary, depending upon the locality. In 1957, ground waters in the central portion of the valley between Gonzales and Soledad showed a boron range between 0.2 and 0.7 ppm, while few wells in the remaining portion of the monitored area had a boron concentration exceeding 0.2 ppm. Total dissolved solids generally did not exceed 400 ppm, except in areas where moderate concentrations of boron were found. In these areas, total dissolved solids ranged from 500 to 1,420 ppm.

The status of sea-water intrusion in Salinas Valley is shown on Plate 4.

Carmel Valley (3-7)

Carmel Valley is located about three miles south of the City of Monterey, and is a long alluvium-filled valley extending eastward from the coast a distance of about 23 miles. However, only the coastal portion of Carmel Valley, which might be susceptible to sea-water intrusion, is included in the monitoring program.

Ground waters of Carmel Valley are a calcium bicarbonate type and, with the exception of hardness and iron, are of excellent mineral quality. An annual monitoring program was established in this area in 1953 to detect sea-water intrusion. Data from the sampling program indicates that there has been no significant variation in mineral characteristics of ground waters during the period of record. There has been no evidence of sea-water intrusion to date in the seven wells which comprise the present network.

Due to sampling difficulties, only two of the seven wells in the monitoring network were sampled in 1957. These wells are located approximately 0.9 mile and 1.7 miles inland from the coast and contained chloride concentrations of 40 ppm and 103 ppm, respectively. Hardness ranged from 187 to 298 ppm, and the iron content was in excess of the maximum limit recommended for domestic use.

Santa Maria River Valley (3-12)

The Santa Maria River Valley ground water basin extends inland from the ocean along the Santa Maria River, a distance of 28 miles. It averages 9 miles in width and includes about 180 square miles.

An annual ground water quality monitoring program was established in 1953 in Santa Maria River Valley basin. The program is primarily concerned with the detection of degradation in quality of ground water which might result from oil field operations or sea-water intrusion. While most

of the oil field brine is conveyed to the ocean by pipe line, there is a possibility that ground water quality could be degraded by accidental spillage of oil field brines or percolation from sumps. In addition, should ground water levels near the ocean be depressed below sea level, the producing ground water aquifers would be threatened with sea-water intrusion.

During 1957, water samples were obtained from 10 monitoring wells. Analyses indicate that the ground water is of a calcium-magnesium sulfate type throughout the basin. The waters are very hard and sulfates greatly exceed the recommended limit of 250 ppm for drinking water; additionally, they are low in boron, per cent sodium, and suitable for irrigation of most crops.

Analyses of waters sampled in 1957 show the following ranges for significant mineral constituents: total dissolved solids content, from 799 to 2,198 ppm; chlorides, from 40 to 140 ppm; sulfates, from 365 to 1,091 ppm; boron, from zero to 0.80 ppm; and per cent sodium, from 15 to 29.

Although a few of the wells have shown gradual degradation, with increases in chlorides, sulfates, and total dissolved solids, there was no significant basin wide variation in mineral quality during the period 1953-1957.

Cuyama Valley (3-13)

The Cuyama Valley ground water basin extends along the Cuyama River, a distance of 35 miles, varies from 1 to 4 miles in width, and comprises about 125 square miles.

The possible degradation of ground water quality by oil industry wastes and mineralized springs, principally in the northern and northwestern part of the basin, prompted the establishment of an annual monitoring

program in this valley in 1953. During 1957, samples were collected from six wells in Cuyama Valley.

The character of the ground water is generally calcium-magnesium sulfate. Although the water is not well suited for domestic purposes, due to extreme hardness and high sulfate concentrations, it is low in boron and per cent sodium and is considered suitable for irrigation of most crops.

Analyses of water samples collected during 1957 indicate the following ranges of mineral constituents: total dissolved solids, from 698 to 4,062 ppm; chlorides, from 18 to 76 ppm; sulfates, from 389 to 2,433 ppm; total hardness, from 183 to 2,200 ppm; boron, from 0.05 to 0.24 ppm; and per cent sodium, from 13 to 63.

Comparison of analyses of well waters obtained in 1957 with those of the four preceding years, indicates that no significant change in mineral quality has occurred in this period.

LOS ANGELES REGION (No. 4)

The Los Angeles Region extends from the southeastern boundary of the watershed of Rincon Creek in Ventura County to the Los Angeles-Orange County boundary, a distance of approximately 100 miles. It extends from the Pacific Ocean inland to the drainage divide, an average distance of 50 miles, and encompasses an area of approximately 4,260 square miles (Plate 1). The region is characterized by broad coastal plains and inland valleys, backed by mountainous topography. The Ventura, Santa Clara, Los Angeles, and San Gabriel Rivers are the principal streams of this region.

The ground water supply of the region has been extensively developed. In many areas, the safe yield of the basins has been exceeded. Supplemental water supplies are imported from Mono and Owens Valleys and the Colorado River.

Sixteen ground water basins and 40 sub-basins have been identified in the Los Angeles Region. However, only five basins or sub-basins have been included in the monitoring program.

Oxnard Plain Pressure Area (4-4.01)

The Oxnard Plain pressure area is a flat, gently sloping plain, roughly triangular in shape, comprising approximately 73 square miles. This area fronts on the Pacific Ocean for a distance of 16 miles and extends inland a maximum distance of about 8 miles.

The main water-bearing zones in Oxnard Plain pressure area are called, in order of depth, the Oxnard, the Mugu, and the Fox Canyon aquifers, all of which are open to the sea. The intrusion of sea water into the Oxnard aquifer at Port Hueneme and the Mugu and Oxnard aquifers near Point Mugu has been evident for several years. At Port Hueneme, the sea-water front has moved inland into the Oxnard aquifer for distances up to one and

one-half miles from the shore line. The intrusion is caused by excessive pumpage of ground water, resulting in lowered water levels and the creation of a landward hydraulic gradient. The monitoring program in Oxnard Plain pressure area was initiated in 1953. Wells in the present program are situated in and around the area of sea-water intrusion.

During 1957, 31 samples were obtained from 20 wells. The mineral analyses of these samples indicate that ground waters in Oxnard Plain pressure area, where not affected by sea-water intrusion, were suitable for irrigation of most crops, except those sensitive to boron. The waters were hard and marginal for domestic use because of high sulfate content. Chlorides ranged from 40 to 73 ppm, sulfates from 123 to 643 ppm, total dissolved solids from 720 to 1,390 ppm, and total hardness from 363 to 765 ppm. Boron ranged from 0.17 to 1.10 ppm.

At Port Hueneme, in the area of sea-water intrusion, well 1N/22W-20R1 showed a chloride content of 6,896 ppm in May, 1957. This well yielded water with a chloride content of 23 to 43 ppm in the early months of 1951. In September 1951, the chloride content rose to 1,285 ppm. Since that time, the chloride content has fluctuated widely with no seasonal pattern. Well 1N/22W-28A2 showed an increase in chlorides from 49 ppm in December, 1956, to 71 ppm in December, 1957.

No significant changes in total dissolved solids, total hardness, chloride content, or general character of the ground water are apparent outside the areas of intrusion. Some of the wells, however, showed a slight decrease in total dissolved solids and chloride content.

The status of sea-water intrusion in Oxnard Plain basin, as of 1957, is presented on Plate 5.

West Coast Basin (4-11.02)

West Coast Basin is one of several basins in the Coastal Plain of Los Angeles County. It is approximately 19 miles long and averages 9 miles in width. In general, its surface is a gently rolling, lightly eroded plain, with an area of about 160 square miles.

The principal aquifers underlying West Coast Basin comprise the Silverado water-bearing zone and the "400-foot gravel" in the San Pedro formation. A condition of overdraft exists in the basin, resulting in sea-water intrusion extending more than one mile inland along the Santa Monica Bay coast into the Silverado water bearing zone. Industrial waste discharges have affected wells in the Torrance and Athens areas. Monitoring programs for each of these areas are currently in effect to detect and to determine the extent of ground water impairment from these sources. Each of these areas is treated in detail in the discussions which follow.

Area of Sea-Water Intrusion. The area monitored for sea-water intrusion borders the coast line of Santa Monica Bay. The wells selected for the monitoring program, which commenced in 1953, are situated in a 15-square-mile area, extending from the northerly limit of the City of El Segundo southward to the vicinity of the City of Redondo Beach. During 1957, six wells were sampled in this area. Two of the wells were sampled twice during this year and the remaining wells were sampled once.

Water from the monitored wells contained chlorides ranging from 85 to 1,004 ppm, and total dissolved solids ranging from 528 to 1,900 ppm in 1957. The quality of water in well 3S/15W-12G1 has fluctuated widely since 1953. During the period October, 1956, to December, 1957, chlorides increased from 285 to 452 ppm, and total dissolved solids increased from 804 to 1,257 ppm. Well 3S/15W-13R2 showed an increase in chlorides from 239 ppm

in May, 1956, to 368 ppm in March, 1957; and, in the same period, total dissolved solids increased from 728 to 1,100 ppm. Well 4S/14W-8F1 showed an increase in chlorides from 398 ppm in June, 1955, to 1,004 ppm in June, 1957, while total dissolved solids increased from 982 to 1,900 ppm. No appreciable changes were noted in analyses of water from the other monitored wells.

The Manhattan Beach Injection Project, operated by the Los Angeles County Flood Control District, has apparently been successful in forming a fresh-water barrier to sea-water intrusion into the Silverado Zone at Manhattan Beach on Santa Monica Bay. However, sea-water intrusion appears to be advancing on either side of the line of injection wells and encroaching on the flanks of the protected area. The status of sea-water intrusion in West Coast Basin is presented on Plate 6.

Torrance Area. The Torrance area is bounded by 190th Street on the north, Main Street on the east, Pacific Coast Highway on the south, and Santa Monica Bay on the west, and comprises an area of about 30 square miles. Wells chosen for monitoring are situated in and around the City of Torrance.

Wastes from the oil and other heavy industries discharged to surface sumps and drainage channels in and near the City of Torrance have seriously affected ground water quality in the upper aquifers.

The monitoring program comprises five wells, selected in 1953 to determine the advance of this pollution and its possible impairment of water quality in the lower aquifers. Impairment of water quality in the lower water-bearing zones could occur by interchange of water in the different aquifers through improperly constructed or abandoned wells or by hydraulic continuity between aquifers.

Analyses of water from monitored wells showed chlorides ranging

from 70 to 205 ppm, sulfates from 0 to 501 ppm, total dissolved solids from 450 to 1,170 ppm, and total hardness from 152 to 643 ppm. No significant change in quality of water from monitored wells was noted between 1956 and 1957.

Athens Area. The Athens area extends approximately from Florence Avenue north of the City of Inglewood to 190th Street on the south, and from Sepulveda Boulevard on the west to Alameda Boulevard on the east, and comprises an area of about 50 square miles. Seven wells, chosen for monitoring in this area in 1953, are grouped in the vicinity of the City of Gardena. They have been selected to detect deterioration of ground water quality resulting from past and present oil well, oil refinery, and other industrial wastes discharged to surface channels and sumps. The monitored area encompasses about 25 square miles.

Analyses of samples collected during 1957 indicate that the total dissolved solids content ranged from 408 to 1,484 ppm, chlorides from 48 to 342 ppm, sulfates from 40 to 184 ppm, and total hardness from 145 to 663 ppm.

Analyses of water from well 3S/13W-29G3 show an increase in chlorides from 43 ppm in 1953 to 71 ppm in 1957, and in total dissolved solids from 484 ppm in 1953 to 553 ppm in 1957.

With the exception of nitrates, the concentration of minerals in water from well 3S/13W-31F1 has increased at a fairly uniform rate since 1953. The nitrate concentration has steadily declined from 47 ppm in 1953 to 16 ppm in 1957. Comparison of 1957 analyses with those available for previous years shows no significant changes in the water from the other monitoring wells.

Central Coastal Plain Pressure and Los Angeles Forebay Areas (4-11.03 and 4-11.04)

Central Coastal Plain Pressure Area and Los Angeles Forebay Area are sub-basins of the Coastal Plain, Los Angeles County. They extend northwest-southeast about 22 miles and average about 12 miles in width.

The monitored area includes portions of both the Central Coastal Plain Pressure Area and the Los Angeles Forebay Area, and is centered in the vicinity of the City of Huntington Park.

The monitoring program was established in this area in 1953 to observe the duration of polluting effects from past waste discharges. The program in 1957 consisted of six wells sampled twice annually. Analyses of samples obtained from monitoring wells during calendar year 1957 show that total dissolved solids content ranged from 387 to 636 ppm, chlorides from 20 to 90 ppm, and hardness from 212 to 373 ppm.

Comparison of 1957 analyses with the prior year's analyses shows minor increases in total dissolved solids and chlorides in several of the wells, but reveals no significant changes in the mineral quality.

Main San Gabriel Basin (4-13.01)

Main San Gabriel Basin, located in Los Angeles County, is an interior valley sloping gently from the San Gabriel Mountains 9 miles southward to the Merced and Puente Hills, encompassing an area of about 115 square miles.

A lag in providing waste disposal facilities presents a potential threat to ground water quality. This area was included in the monitoring program in 1953 to detect any water quality changes which might be attributable to the disposal of large quantities of sewage and industrial wastes.

Concentrations and ranges of pertinent constituents, as determined

from mineral analyses of samples obtained from 11 monitoring wells during 1957, were as follows: total dissolved solids ranged from 215 to 806 ppm, chlorides from 10 to 105 ppm, and nitrates from 1.0 to 47 ppm.

Comparison of 1957 analyses with prior analyses indicates, in general, only minor changes and fluctuations in mineral concentrations. An exception is well 1S/10W-19N1, where chlorides and sulfates showed the following trends:

Date	Chlorides in ppm	Sulfates in ppm
3/27/55	24	59
5/25/55	67	199
12/27/56	113	357
6/14/57	105	317

These changes are attributed to the percolation of Colorado River water from an unlined channel in the vicinity of this well.

CENTRAL VALLEY REGION (No. 5)

The Central Valley Region extends from the California-Oregon line southward to the Tehachapi Mountains, and from the Coast Range on the west to the Sierra Nevada on the east. It averages 120 miles in width and is more than 500 miles in length. The region comprises an area of approximately 59,000 square miles, and includes about 38 per cent of the land surface and nearly 44 per cent of the valley and mesa lands of the State (Plate 1).

Two major valleys, the San Joaquin and the Sacramento, are located in this region. These valleys contain the largest bodies of usuable ground water in the State. The presence of numerous potential sources of water quality impairment requires that constant vigilance be maintained to assure the continued usefulness of this important source of water supply.

Of 29 ground water basins identified in this region, only Kelseyville Valley and Upper Lake Valley in Lake County, and portions of the Sacramento and San Joaquin Valleys have thus far been included in the monitoring program.

Upper Lake Valley (5-13)

Upper Lake Valley, which borders on and lies north of Clear Lake in Lake County, extends about seven miles north from the shore line of Clear Lake, and includes an area of about 16 square miles. Boron is present in excessive amounts in a few of the wells in the western and southern portions of the valley. The need to detect any migration of the high boron waters into other wells prompted the establishment of a monitoring program of two wells in the area in 1953.

Analyses of samples obtained from two wells in 1957 show that the ground water contained less than 10 ppm of chlorides, and less than 15 ppm of sodium.

No boron was shown in analyses of ground water sampled in Upper Lake Valley during 1957, indicating that boron had not degraded water in the monitored wells. Comparison of the results of analyses of 1957 samples with those of 1953 showed virtually no change.

Kelseyville Valley (5-15)

Kelseyville Valley is a gently rolling plain bordered by Clear Lake on the north. The monitored area is about seven miles in length from north to south and five miles in width, and encompasses approximately 30 square miles.

This area was included in the monitoring program in 1953 because of the presence of high concentrations of boron in the ground waters from some wells in the eastern and northern portions of the valley and the possibility that this high boron water may migrate into other wells. The program in 1957 comprised 10 wells which were sampled once in July.

Maximum concentrations of sodium and chloride in ground waters sampled in 1957 were 25 ppm and 18 ppm, respectively. Water from well 13N/9W-16D1 contained a boron concentration of 0.60 ppm, the highest value for the monitored wells. The per cent sodium ranged from 7 to 35, with seven of the ten monitored wells yielding waters with less than 10 per cent sodium. The ground water generally ranged from moderately hard to hard. Comparison of mineral analyses of samples collected from the monitored wells between July, 1953, and July, 1957, shows decreases in the boron concentrations, ranging between 0.07 and 0.16 ppm. The maximum change occurred in well 13N/9W-12M1, where the boron concentration decreased from 0.50 ppm in 1953 to 0.34 ppm in 1957. There were no significant changes in the other reported mineral constituents.

Sacramento Valley (5-21)

The portion of the Central Valley which lies generally north of the Cosumnes River is known as the Sacramento Valley. The valley floor comprises an area of approximately 5,000 square miles and contains the second largest ground water reservoir in the State.

As of 1957, three areas had been included in the monitoring program in Sacramento Valley: Sutter County, Capay Valley, and Sacramento County. Of these, Sutter and Sacramento Counties were reported previously, and Capay Valley was added to the program in 1957.

Sutter County (5-21a) Most of the area in Sutter County served by ground water supplies is included in the monitoring program. The majority of the monitoring wells are located in an area between the Feather River and Sutter By-Pass, extending about 18 miles north to south. Also included is an area in the eastern part of the county south of Bear River and a small area near Robbins in the southwest part of the county.

Mineral quality of native ground water supplies in Sutter County is excellent to good, except for hardness which ranges from moderate to hard. In local areas, however, high chloride concentrations are found. Because of these high chlorides, an annual ground water quality monitoring program was initiated in 1953.

During 1957, samples were collected from 33 wells. Three wells, 12N/2E-11N1, 12N/2E-16R1, and 12N/2E-23Q1, showed sodium percentages in excess of 75 per cent. Chlorides ranged between 2.7 and 1,330 ppm, with ten of the monitored wells exceeding 175 ppm chlorides. In the sampled wells, boron ranged as high as 0.83 ppm; however, only six wells yielded water with boron concentrations in excess of 0.50 ppm. Total hardness exceeded 200 ppm

in 19 of the monitored wells, and was between 36 and 200 ppm in the remaining wells.

Comparison of mineral analyses of samples collected from the monitoring network indicates little change in the quality characteristics of the ground water sampled. Chloride content increased moderately in samples from five wells between June, 1955, and July, 1957. The maximum increase was 80 ppm in well 14N/3E-28R1. During the same period, however, chloride concentrations decreased 89 ppm, 107 ppm, and 151 ppm in wells 13N/3E-14R1, 13N/3E-23B1, and 14N/3E-16B2, respectively. This fluctuation in chlorides has been investigated previously and indications are that deep-seated connate brines underlie the area. The increase in chloride content is probably caused by upward migration of brines into the fresh-water aquifers during periods of heavy irrigation pumping, and the decrease by repulsion of these brines during periods of abundant rainfall when ground waters are replenished.

Yolo County, Capay Valley Area (5-21b) The Capay Valley area extends northwesterly from the community of Capay to Rumsey in the western portion of Yolo County. The area included in the monitoring program is about 15 miles in length and ranges from 1 to 2 miles in width.

Capay Valley was included in the monitoring program in 1957 because of high boron concentrations in ground water underlying portions of the valley. Ground water in Capay Valley is predominantly Class 2 irrigation water, and is moderately to very hard. The monitoring network in 1957 consisted of nine wells, sampled in July.

Study of the available analyses indicates that ground water quality in Capay Valley is highly variable. In 1957, total dissolved solids ranged from about 306 to 1,090 ppm, the maximum value being found in water from well 10N/2W-18F2. Chloride concentrations varied from 8.0 ppm in well

10N/2W-23A1 to 205 ppm in well 10N/2W-18F2. Although sodium ranged from 30 to 40 per cent in most of the wells, well 10N/2W-17J1 had a sodium percentage of 81. Boron concentrations ranged from 0.37 to 1.6 ppm, with six of the sampled wells having boron in excess of 0.74 ppm.

Sacramento County (5-21c) Most of Sacramento County, except the portion along the eastern boundary underlain by formations which yield negligible quantities of ground water, has been included in the monitoring program. An annual sampling program was initiated in this area in 1955.

Ground water of excellent mineral quality occurs generally throughout the county; however, there are localized areas where water quality is a problem. A potential source of degradation to ground water quality in the eastern portion of the county is an industrial waste discharge from the Aerojet-General Corporation's plant. This discharge contains potassium perchlorate ($KClO_4$) and ammonium perchlorate (NH_4ClO_4) in solution. The perchlorates of potassium and ammonium are reported to be toxic to plant life to approximately the same extent as boron. Determinations for ammonium and perchlorate ions are included in the analyses of ground water from wells in this vicinity. Ground water contains less than 350 ppm total dissolved solids, and less than 0.3 ppm boron. Total hardness ranges from 43 to 202 ppm and per cent sodium generally does not exceed 50.

In 1957, ground water samples were collected from 27 wells in Sacramento County. Comparison of the analyses of samples from the monitored wells since 1955 shows no significant change or trend in mineral characteristics of ground water in Sacramento County. However, water from well 8N/4E-26D1 contained 0.70 ppm boron in July, 1957, as compared with no boron in February, 1956. The reason for the boron increase in water from this well has not as yet been determined.

Mineral analyses of samples collected in 1957 showed 1.0 ppm perchlorate ion (ClO_4) and no ammonium ion (NH_4) present in ground water in the vicinity of the aircraft industry plant, indicating that these constituents were not present in excessive amounts. Well 9N/7E-28B1 showed a decrease in perchlorates from 18 ppm in May, 1956, to 1 ppm in September, 1957.

San Joaquin Valley (5-22)

The San Joaquin Valley includes about 10,000 square miles of irrigable soils and extends from the Tehachapi Mountains north to the vicinity of the Cosumnes River. Underlying this valley is the largest ground water reservoir in the State. A bed of diatomaceous clay, commonly referred to as the Corcoran clay, continuous throughout most of the San Joaquin Valley, separates the water-bearing formation in this reservoir into an upper and lower zone. This clay bed is about 40 to 50 feet in thickness and generally lies between 300 and 350 feet below land surface. Wells in the western portion of the valley draw water principally from the lower zone due mainly to the poor quality of upper zone waters. Wells in the remainder of the valley produce good quality waters from both zones.

There are presently several ground water quality problems in the San Joaquin Valley. Monitoring programs have been established in each of these problem areas.

San Joaquin County (5-22a) The area included in the monitoring program in San Joaquin County comprises most of the valley floor. The area extends from the Sacramento County line on the north to the Stanislaus County line on the south, and ranges in width from about 14 to 30 miles.

Ground water in San Joaquin County is, in general, suitable for

both domestic and agricultural use, although some of the water contains moderately high boron concentrations. In the vicinity of the City of Stockton, a threat to water quality exists due to saline water bodies which underlie the area and extend throughout most of the delta lands in the northwestern part of the county.

A water quality monitoring program was established in the vicinity of Stockton in 1953, and extended to include most of the county in 1957. The purpose of this program is to maintain a check on the possible migration of the poor quality water in the western part of the county, and to detect any degradation due to movement of these waters into the eastern part of the county. The monitoring network in San Joaquin County in 1957 comprised 43 wells sampled annually during the irrigation season. Twenty-five of the wells are located in the southwestern portion of the county, and the remaining 18 wells are distributed throughout the central and eastern portion of the county.

Wells in the western portion of San Joaquin County yielded waters, in 1957, containing boron in concentrations ranging from 0.53 to 5.7 ppm. Fifteen of the sampled wells had boron in excess of 1.0 ppm, while only three wells had boron concentrations exceeding 2.0 ppm. Total dissolved solids exceeded 700 ppm in 12 of the west side wells. Of all the wells sampled in this area, only well 2S/4E-36P1 had water with less than 400 ppm total dissolved solids. Total hardness exceeded 200 ppm in 27 of the wells, indicating that hard ground waters exist in the western portion of San Joaquin County. Sodium ranged between 35 and 60 per cent in most of the monitored wells.

Ground waters in the central and eastern portions of the county contained concentrations of total dissolved solids in 1957, ranging from

about 200 ppm to 1,500 ppm. Sodium ranged between 18 and 85 per cent, with the higher ranges in the vicinity of Stockton. Ten of the sampled wells yielded water with a sodium percentage greater than 50 per cent. Fourteen of the wells monitored in the central and eastern portion of the county yielded water with a total hardness of less than 150 ppm. Boron ranged between 0.10 and 1.10 ppm with 13 of the monitored wells exceeding 0.50 ppm.

Analyses show only minor changes in concentrations of mineral constituents in the wells which have been sampled since 1953. These changes, in general, are slight increases in sodium, chlorides, and total dissolved solids.

Stanislaus County (5-22b) The monitored portion of Stanislaus County covers approximately 800 square miles and includes all of the valley floor in Stanislaus County except for an area of about 185 square miles in the north central portion.

Ground waters in Stanislaus County are similar in mineral quality to the surface waters, constituting the principal source of replenishment. Wells in the east side of the area generally yield bicarbonate water of excellent quality, while west side ground waters are of variable type and are moderately high in sulfates, chlorides, and boron. Wells in the trough of the valley produce sodium chloride waters that range in concentration from about 450 to 5,700 ppm total dissolved solids.

An annual monitoring program of 45 wells was established in Stanislaus County in 1957 because of numerous potential sources of ground water quality impairment.

Analyses of samples collected in Stanislaus County during 1957 indicate a wide range in concentration in several of the mineral constituents. Total dissolved solids ranged between 199 ppm in water from well 4S/11E-21D1

and 2,760 ppm in well 3S/13E-32D1. The chloride concentrations in water from these two wells, 4.2 and 1,620 ppm, respectively, were the minimum and maximum values found in the sampled wells. The boron content was generally less than 0.5 ppm, although one well, 4S/7E-16E1, produced water with a boron content of 2.5 ppm. Per cent sodium did not exceed 89 per cent in any of the sampled wells.

Water from 22 of the monitored wells showed total hardness in excess of 200 ppm and would be classed as hard. Sulfate concentrations in excess of 250 ppm, the maximum value recommended for drinking water, were found in water from five of the monitored wells.

Merced County (5-22c) Two separate areas are included in the monitoring program in Merced County. One area extends along the west side of the valley floor between the Stanislaus and Fresno County lines. This area varies in width from 6 to 8 miles, is about 32 miles in length and includes about 225 square miles. It encompasses the land in Merced County served by Central California Irrigation District. The second area is located in the central part of the county. It is from 10 to 12 miles in width, about 40 miles in length and includes about 400 square miles. Merced Irrigation District and that portion of Turlock Irrigation District in Merced County are located in this second area.

Although ground water in the western part of the county has a high chloride content, the predominant anions are sulfate and bicarbonate. Wells in the central portion, less than 200 feet in depth, yield calcium bicarbonate water of excellent quality. Ground water from the deeper wells is of similar anionic composition; however, they generally have a much higher sodium content. An annual monitoring program of 41 wells was established in Merced County during 1957 to maintain surveillance on water quality

conditions, and to detect possible movement of mineralized water near the trough of the valley.

Wells sampled in the central portion of Merced County yielded waters of excellent mineral quality in 1957. Total dissolved solids did not exceed 300 ppm in 18 of the monitored wells and the per cent sodium did not exceed 50 per cent in 21 of the sampled wells. Maximum values, 545 ppm total dissolved solids and 68 per cent sodium, were found in water sampled from well 6S/10E-28K1. Boron ranged from 0 to 1.9 ppm in the sampled waters. Ground waters from these wells were slightly to moderately hard, with only well 7S/15E-30E1 showing a total hardness in excess of 200 ppm.

Ground water samples from wells in the western portion of the county showed highly variable mineral quality. Total dissolved solids in the well waters ranged from 333 to 2,690 ppm and per cent sodium from 26 per cent to 64 per cent. Waters from four of the wells contained total dissolved solids concentrations in excess of 1,000 ppm, with the highest value found in well 11S/10E-23K1. Eight of the monitored wells yielded water with boron concentrations less than 0.50 ppm; although ground water samples from wells 12S/11E-3C1, 11S/10E-23K1, and 9S/9E-21F1 contained boron in concentrations of 2.8, 1.9, and 1.3 ppm, respectively. Total hardness varied between 122 and 1,170 ppm with nine of the wells yielding water with total hardness in excess of 200 ppm.

Waters from well 12S/11E-3C1 and 11S/10E-23K1 contained sulfate concentrations of 468 and 885 ppm, respectively. The latter well also contained 77 ppm nitrates. These concentrations are in excess of the sulfate and nitrate limits recommended by the State Department of Public Health for drinking water, as presented in Appendix C.

Madera County (5-22d) All of the valley floor land in Madera County is included in the monitoring program. It extends from the foothills on the east to the San Joaquin River on the west, and from the Merced County line on the north to the Fresno County line on the south.

Calcium-sodium bicarbonate type waters of excellent mineral quality are found, generally, in wells less than 350 feet deep. Water in the lower zones in the western part of the county, effectively confined by the Corcoran clay, is predominantly of sodium bicarbonate type, with sodium percentages often exceeding limits recommended for irrigation waters. Wells in the western part bordering the San Joaquin River yield waters high in chlorides.

The existence of high chloride concentrations in portions of the aquifers and high percentage sodium in the lower water bearing zones prompted the inclusion of Madera County in an annual monitoring program in 1957. During 1957, samples were collected from 28 wells.

Study of the analyses of mineral constituents in the waters from the monitored wells indicates ground waters in Madera County were generally of excellent quality in 1957. In 27 of the 28 monitored wells, total dissolved solids did not exceed a concentration of 425 ppm; whereas, well 11S/14E-20L1 yielded water with 1,220 ppm total dissolved solids. Ground water from the monitored wells had a maximum boron concentration of 0.17 ppm. In 25 of the monitored wells, per cent sodium ranged from 27 to 49 per cent, while wells 13S/15E-22J1, 12S/14E-17B1 and 12S/14E-34H1 showed sodium percentages in excess of 80 per cent. These latter wells are located in the western portion of Madera County and produce water from a depth of 240 to 250 feet. Ground waters for the most part, ranged from soft to moderately hard, with only three of the monitored wells having a total hardness in excess of 200 ppm.

Fresno County (5-22e) The monitored area in Fresno County encompasses that portion of the valley floor area generally lying west of the San Joaquin River and Fresno Slough and includes an area lying east of Fresno Slough, in the vicinity of Raisin City Oil Field. The monitored area extends approximately 72 miles in a northwest-southeast direction, averages about 20 miles in width, and covers about 1,300 square miles.

A serious water quality problem exists in the west side area of Fresno County. Highly mineralized waters occur above and below the Corcoran clay. High boron concentrations are found in ground waters in local areas and evidence exists of ground water degradation by oil field wastes.

There are two major water-bearing zones in the west side area. Quality of water in these zones is variable. The upper zone, which extends to a depth 200 to 300 feet below the land surface, yields a calcium-magnesium sulfate water with a total dissolved solids content of about 3,000 ppm and a sodium percentage of 35. The lower zone yields a sodium sulfate water with a total dissolved solids concentration of about 800 ppm and sodium ranging from 70 to 90 per cent. This lower zone furnishes about 80 per cent of the ground water supply in the area.

These existing and potential problems prompted the inclusion of this area in an annual monitoring program in 1953. During 1957, samples were collected from 51 wells in the west side area and 16 wells in the vicinity of the Raisin City Oil Field. Nearly all the monitored wells yield water from the lower zone.

Wastes from Raisin City Oil Field operations are presently being disposed of by injection into deep wells. These wells are more than 1,500 feet in depth and the waste is injected into the underlying saline water body. Previously, however, the oil field wastes were discharged into unlined

sumps, and final disposal was by means of evaporation and percolation. Water from wells adjacent to these sumps have, in the past, contained chloride concentrations in excess of the general quality level in ground water.

Boron concentrations ranging from 1.0 to 3.5 ppm was found in 32 of the 51 wells sampled in this area in 1957. Fourteen wells yielded water with sodium in excess of 75 per cent and the total hardness in water samples from 36 of the wells exceeded 200 ppm.

Comparison of partial mineral analyses of samples collected in the West Side Area during the five-year period of record shows no definite trends in chloride, sodium or boron concentrations.

In the vicinity of Raisin City Oil Field, analyses show that, except for three wells in which chlorides are increasing, sodium and chloride concentrations generally did not exceed 130 ppm. Eleven of the monitored wells yielded water with total hardness ranging from 12 to 84 ppm and, except for well 15S/17E-13G1, the monitored wells all showed boron concentrations less than 0.57 ppm. Per cent sodium, however, exceeded 75 per cent in samples from nine of the monitored wells.

Sodium and chloride concentrations in water from three wells increased significantly during the period of record. The most notable increase occurred in waters from well 15S/17E-13G1, where chloride concentrations increased from 2,010 ppm in 1955 to 27,400 ppm in 1957. This well also showed significant increases in sodium, boron, and total hardness concentrations.

Kern County (5-22f) The monitoring program in Kern County encompasses that area extending from the northern boundary of Kern County south to Wheeler Ridge and lying between the Coast Range and the Tehachapi Mountains. The area is approximately 60 miles in length and averages 35 miles

in width. Edison and Devils Den Oil Field Areas, which were previously reported separately, are now included in this monitoring area.

Ground waters in Kern County vary considerably in mineral characteristics. High concentrations of boron and other constituents occur in the monitored area, notably in the southern and western portions. Inferior quality water and oil field waste waters are potential degradants. The mineral concentrations in ground waters of Devils Den Oil Field area are in excess of the recommended limits for domestic use and for irrigation water for most crops. Oil field waste waters in this area are disposed of in evaporation or percolation basins located in natural depressions on hillsides and in gullies. These depressions are adapted for waste disposal by the construction of earthen dikes and impounding dams. Seepage and overflow of the waste waters pose a potential threat to quality of ground water within the oil field area.

Available data concerning the nature of ground waters in Sunflower Valley indicate that they are inferior in quality. Concentrations of total dissolved solids and boron generally exceed 1,000 and 1.5 ppm, respectively. Ground waters are extremely hard in this area, with total hardness ranging from 511 ppm to 1,520 ppm.

To observe and record any changes in the mineral character or concentration of mineral constituents, an annual monitoring program consisting of 42 wells was established in Kern County. Monitoring in the Edison and Devils Den Oil Field Areas was started in 1953 and the remainder of the area was included in 1957.

Total dissolved solids in water from wells located in the southern portion of the monitored area ranged from 218 to 4,480 ppm with about half of the wells yielding water with more than 1,000 ppm. Wells contained boron

concentrations ranging from 0.28 to 4.1 ppm, and, except for one well, the per cent sodium did not exceed 60. Well 32S/27E-6D1 showed a sodium ratio of 77 per cent. Water from six of the sampled wells showed total hardness in excess of 400 ppm. The predominant anion was sulfate.

All of the 19 sampled wells scattered throughout the north-central portion of Kern County yielded water with a total dissolved solids concentration of less than 600 ppm and boron concentrations less than 0.5 ppm. Total hardness ranged from 6 to 625 ppm. The ground waters were generally of a sodium bicarbonate type.

Wells 26S/27E-9G1 and 27S/27E-29J1, located north of Bakersfield, yielded water with total dissolved solids concentration of 1160 and 925 ppm, respectively; and total hardness exceeded 400 ppm in both wells.

Comparison of analyses of samples collected in 1957 in Devils Den Oil Field area in the northwestern part of the county with those analyses previously reported reveals no significant increase in mineral concentrations. The boron content of water from several of the monitored wells has varied slightly between 1953 and 1957. However, this variation in boron concentration has been cyclic and no definite trend is apparent. Total dissolved solids in water from the monitored wells ranged between 1,080 and 3,550 ppm. The boron concentration ranged from 1.8 ppm in water from well 25S/18E-3D1, to 9.7 ppm in water from well 25S/19E-7P1. Sulfates exceeded 450 ppm in samples from six of the monitored wells. All analyses showed sulfate to be the predominant anion.

LAHONTAN REGION (No. 6)

The Lahontan Region consists of that area in California generally east of the drainage divide of the Sierra Nevada, and the Tehachapi, San Gabriel, and San Bernardino Mountains (Plate 1). This region includes an area of approximately 33,000 square miles extending over 600 miles along the eastern boundary of California. All basins in this region have interior drainage.

Ground water provides most of the water supply for the southern part of this region, although diverted surface waters constitute a minor source. The growth of some areas in the southern portion of the region has been affected by the limited water supply. Precipitation is sporadic and generally less than five inches per year in the Antelope Valley-Mojave River area.

Of more than 50 ground water basins which have been identified in this region, only the Lower Mojave River Valley has been included in the monitoring program.

Lower Mojave River Valley, Barstow to Yermo (6-40)

The lower Mojave River Valley ground water basin extends for 25 miles eastward from the "narrows" at Barstow. It varies in width from two to seven miles and comprises about 160 square miles.

The portion of this ground water basin which is monitored extends from Barstow to Yermo. The possibility of degradation due to inflow of mineralized waters from the foothills on the south as well as from discharges to the dry river bed of sewage effluents and industrial wastes at Barstow and Nebo, create a threat to the ground water quality. Some of the wells located near the eastern edge of the City of Barstow are no longer used. Taste and odor problems are prevalent in this area. Also, wells in this

vicinity contain boron in excess of limits recommended for irrigation water and fluoride concentrations in excess of limits specified in drinking water criteria. The mineral character of the ground waters is variable, although sodium is usually the predominant cation and bicarbonate is usually the predominant anion. A monitoring program was established in 1953 to maintain a check on the possible sources of degradation. In 1957, 16 samples were collected from 12 wells in this area.

Comparison of 1957 analyses with those of prior years shows fluctuations in the analyzed constituents in most wells, but in general, no significant trend was discernable. Analyses of samples obtained from 12 wells during 1957 show that total dissolved solids ranged from 312 to 1,060 ppm, chlorides from 28 to 191 ppm, and total hardness from 98 to 350 ppm. Analyses of samples from well 9N/1W-9G1 indicate an increase in boron from 0.14 ppm in August, 1951, to 1.20 ppm in May, 1955, and to 1.80 ppm in December, 1957.

COLORADO RIVER BASIN REGION (No. 7)

The Colorado River Basin Region is bounded on the north by the southern boundary of the Mojave River watershed, on the south by the California-Mexico boundary, and on the west by the San Bernardino Mountains and the San Jacinto and Peninsular Ranges. The Colorado River and the Nevada State line bound the area on the east (Plate 1). This region comprises all basins draining into the Colorado River and Salton Sea. The region has an average width of more than 125 miles, an average length of about 150 miles, and includes an area of approximately 20,000 square miles.

Forty-six ground water basins have been identified in this region, one of which has been included in the monitoring program.

Coachella Valley (7-21)

The Coachella Valley basin includes an area of about 680 square miles. It is approximately 65 miles long, trends generally in a southeasterly-northwesterly direction, and ranges in width from about 3 miles at the northwestern end to 20 miles at the southeastern end.

The mineral character of the well water varies throughout the monitored area. Calcium is usually the predominant cation in the northwestern portion of the basin near the areas of replenishment from the Whitewater River system, while sodium is the predominant cation in the southeastern portion of the basin. Bicarbonates are generally the predominant anion; however, sulfate anions are becoming more prominant in several wells in the northern portion of the area. This character shift may be the result of the use of imported Colorado River water in this portion of the area, where the producing zone is unconfined.

A potential problem of ground water quality degradation due to percolation of inferior quality waste effluent and return irrigation water

exists in this valley. There is a possibility that degraded waters of the shallow zone can move through abandoned or improperly constructed wells or through interconnected aquifers into the deeper zone.

The monitoring program in the Coachella Valley ground water basin was initiated in 1953 to detect any pollution or degradation through interconnected ground water zones, and to show any quality changes produced by imported water. In general, the area included in this monitoring program is the same area that uses Colorado River water to supply most of its water requirements. Twenty-five samples were taken from twelve wells in this area in 1957.

Analyses show that the total dissolved solids content ranged from 153 to 1,037 ppm, the highest concentration being found in well 7S/8E-22M1. High nitrate concentrations were found in well 5S/7E-33C1, 41 ppm in March, 1957, and 63 ppm in October, 1957. However, analyses of samples from nearby wells indicated this to be a localized condition. Four of the 12 wells sampled had high sodium percentages, which ranged from 60 per cent to 92 per cent. The fluoride content ranged from 0 to 10 ppm, with three of the well waters having concentrations exceeding 1.5 ppm.

A few of the monitored wells in Coachella Valley have shown an increase in total dissolved solids. The greatest change occurred in well 7S/8E-22M1, in which total dissolved solids increased from 230 ppm in July, 1954 to 1,037 ppm in September, 1957.

SANTA ANA REGION (No. 8)

Santa Ana Region comprises the entire drainage area of the Santa Ana River, as well as all coastal basins draining into the Pacific Ocean between the Los Angeles-Orange County line on the north and west, and the drainage divide between Muddy and Moro Canyons on the south (Plate 1). This region extends about 25 miles along the coast and includes an area of approximately 2,850 square miles.

Nine ground water basins and 27 sub-basins have been identified in this region. Three of these basins have been included in the monitoring program: East Coastal Plain Pressure Area, Chino Basin, and Bunker Hill Basin.

East Coastal Plain Pressure Area (8-1.01)

East Coastal Plain Pressure Area, located in Orange County, fronts on the ocean a distance of 15 miles between the Los Angeles-Orange County line and Newport Beach, extends inland an average distance of 10 miles, and comprises approximately 180 square miles.

The intrusion of saline water into the aquifers of the Santa Ana gap has been evident for several years. The lowering of the water table inland has reversed the historic seaward hydraulic gradient, permitting landward movement of saline water. In the Santa Ana gap, saline water has penetrated inland a distance of 2.5 miles in the Talbert water-bearing zone, one of the principal producing aquifers in this area. Saline waters have recently become evident inland from the fault zone under Bolsa Mesa. Determining the source of water quality impairment is made difficult in this ar a by the disposal of oil well brines into drainage ditches, bays, sloughs and directly on the land. The monitoring program was established

in 1953 to detect impairment to water quality caused by oil well brines and sea-water intrusion.

Ranges in concentrations of pertinent constituents in 30 samples obtained from 18 wells during 1957 were as follows: total dissolved solids, from 172 to 15,600 ppm; chlorides, from 10 to 7,028 ppm; and, sulfates, from 2 to 938 ppm. The better quality waters were generally sodium bicarbonate in character, while the poorer quality waters were calcium chloride.

Comparison of analyses from 1957 and prior years indicates a continuing increase in the concentration of total dissolved solids and chloride ions in water from the monitored wells located nearest the ocean. This increase is evident in wells 5S/11W-26F4, 27H4; 6S/10W-6L2, 8D9; 6S/11W-3R2, 12F3, and 12Q1. Examples of the rates of chloride increase are illustrated by the analysis record of the following three wells. The chlorides in well 5S/11W-26F4 increased from 31 ppm in March, 1953, to 282 ppm in September, 1957. The chlorides in well 6S/10W-6L2 increased from 21 ppm in September, 1953, to 2,074 ppm in September, 1957. The chlorides in well 6S/11W-12Q1 increased from 5,070 ppm in September, 1953, to 7,028 ppm in March, 1957. In ground waters further inland, no increase in chlorides was detected and no appreciable changes occurred in the mineral quality. The status of sea-water intrusion into the East Coastal Plain Pressure Area is shown on Plate 7.

Chino Basin (8-2.01)

Chino Basin, located in San Bernardino and Riverside Counties, occupies a portion of the Upper Santa Ana Valley. The basin is about 20 miles in length, averages 12 miles in width, and comprises about 237 square miles.

A number of industrial establishments in the San Bernardino County

portion of the Chino Basin discharge wastes to land. The monitoring program consists of nine wells which are situated below the critical waste discharges. The greatest concentration of wells is south of the Ontario International Airport near the aircraft maintenance and overhauling facilities. This monitoring program was established in 1953 to detect any adverse effects from improper disposal of industrial wastes.

Concentrations and ranges of pertinent mineral constituents in 21 samples from the nine wells during 1957 were as follows: total dissolved solids, from 165 to 650 ppm; nitrates, from 1.5 to 62 ppm; and chlorides, from 6 to 56 ppm.

A comparison of mineral analyses covering the period 1953 to 1956 reveals a trend of slightly increasing concentrations of both chlorides and total dissolved solids in most well waters. This apparent trend was interrupted during 1957 when most of the analyses indicated minor decreases in total dissolved solids and chlorides. The analyses of samples from well 2S/7W-23E1 indicate a more or less continuous annual decrease in the concentration of dissolved minerals. Total dissolved solids in the October, 1953, sample from this well was 858 ppm, while the June, 1957, sample contained only 530 ppm. However, this indicated improvement in water quality is considered to be local in extent.

Bunker Hill Basin (8-2.06)

Bunker Hill Basin, located in the Upper Santa Ana River drainage area, abuts against the high, rain-catching San Bernardino Mountains for a distance of 20 miles. Bunker Hill Basin is approximately 8 miles in width and encompasses about 92 square miles in the eastern portion of this plain.

The monitoring program was initiated in 1953 to detect changes in water quality caused by disposal of industrial wastes to land.

Originally, monitoring wells were selected near the site of the waste disposal sumps of the Culligan Zeolite Company north of the City of San Bernardino. Since then, additional wells have been selected for sampling along the reach of the Santa Ana River below Redlands sewage treatment plant and Norton Air Force Base.

During 1957, 15 ground water samples were obtained from eight wells in this area. Analyses of these samples show the following concentrations of important mineral constituents: total dissolved solids, from 160 to 475 ppm; chlorides, from 7 to 39 ppm; and boron, from zero to 1.0 ppm.

Comparison of 1957 analyses with previous year's analyses indicates that several changes in water quality have taken place within this basin. Analyses of water samples from well 1N/4W-29E3, located below the Culligan Zeolite Company's waste disposal sumps, show a progressive increase in calcium, sulfate and total dissolved solids since 1954, as shown in the following tabulation:

Date	Calcium ppm	Sulfate ppm	Total dissolved solids ppm
12-15-54	66	34	280
9-20-55	77	60	290
3-14-56	78	72	390
9-13-56	86	82	438
3-11-57	90	108	382
9-25-57	107	142	475

No significant change in sodium, chloride, or nitrate is noticeable. Water from well 1S/4W-29F1, which is also located near the Culligan Zeolite Company's waste disposal sumps, shows similar characteristics.

Well 1S/3W-8N1, located below the City of Redlands sewage treatment plant, shows a continuous increase in total dissolved solids from 178 ppm in August, 1955, to 453 ppm in September, 1957.

SAN DIEGO REGION (No. 9)

The San Diego Region comprises all basins draining into the Pacific Ocean from the drainage divide between Muddy and Moro Canyons in Orange County on the north, to the California-Mexico Boundary on the south, and averages 45 miles in width (Plate 1). It occupies an area of approximately 3,830 square miles.

Fifty-four ground water basins have been identified in this region. Three of these basins, San Luis Rey Valley, El Cajon Valley, and Tia Juana Basin, are included in the monitoring program.

San Luis Rey Valley (9-7)

San Luis Rey Valley is a long, narrow river valley in northern San Diego County, extending approximately 30 miles inland from the Pacific Ocean. Only the lower portion of this valley, which is adjacent to the ocean and extends approximately six miles inland, is included in the monitoring program. The valley floor in this area is about one mile wide. The principal pumping zone consists of about 100 feet of unconfined permeable sands and gravel occurring beneath a section of fine sand, silt, or clay.

Deterioration of ground water quality in wells near the coast has been evident for many years. This deterioration is attributed to an adverse salt balance, inflow of water of inferior quality from adjacent older sediments, and sea-water intrusion. Under present and expected futur conditions of development, continued impairment may render more and more of the ground water unsuitable for domestic use and irrigation. The monitoring network in this valley was initiated in 1953.

The character and mineral quality of ground water in this monitored area is extremely variable. Mineral analyses of 18 samples taken from 11 wells in 1957 showed the following: Chloride concentrations ranged from 97 ppm

at a well 5.3 miles from the coast to 10,030 ppm at a well 0.7 mile from the coast, total dissolved solids ranged from 420 to 20,360 ppm, and per cent sodium ranged from 32 per cent to 74 per cent.

Review of the analyses indicates that deterioration of ground water quality has continued. Seven of the 11 monitoring wells show increases in chlorides and total dissolved solids during the period of record.

El Cajon Valley (9-16)

The El Cajon Valley is a small basin with an area of approximately 22 square miles located in San Diego County. It is approximately five miles wide and four miles long. The area is surrounded by low hills except for a small opening into the San Diego River Valley. The valley is drained by Forester Creek, which is tributary to the San Diego River.

This area has been included in the monitoring program to detect changes in quality due to use and reuse of ground water and changes resulting from the importation of Colorado River water. Twenty-two samples were taken from 12 wells in this area during 1957.

Review of the analyses for 1957 indicates that all monitoring wells yielded waters high in total dissolved solids, ranging from 768 to 1,792 ppm. High chlorides were present in almost all of the well waters, and ranged from 195 to 890 ppm. The nitrate content ranged from 0 to 87 ppm with the concentration exceeding 44 ppm in 5 of the monitoring wells.

No significant changes in mineral quality have been detected in the ground waters of this basin since the start of the monitoring program in 1953. However, most of the wells have shown slight increases in chloride content and total dissolved solids over this four-year period of record.

Tia Juana Basin (9-19)

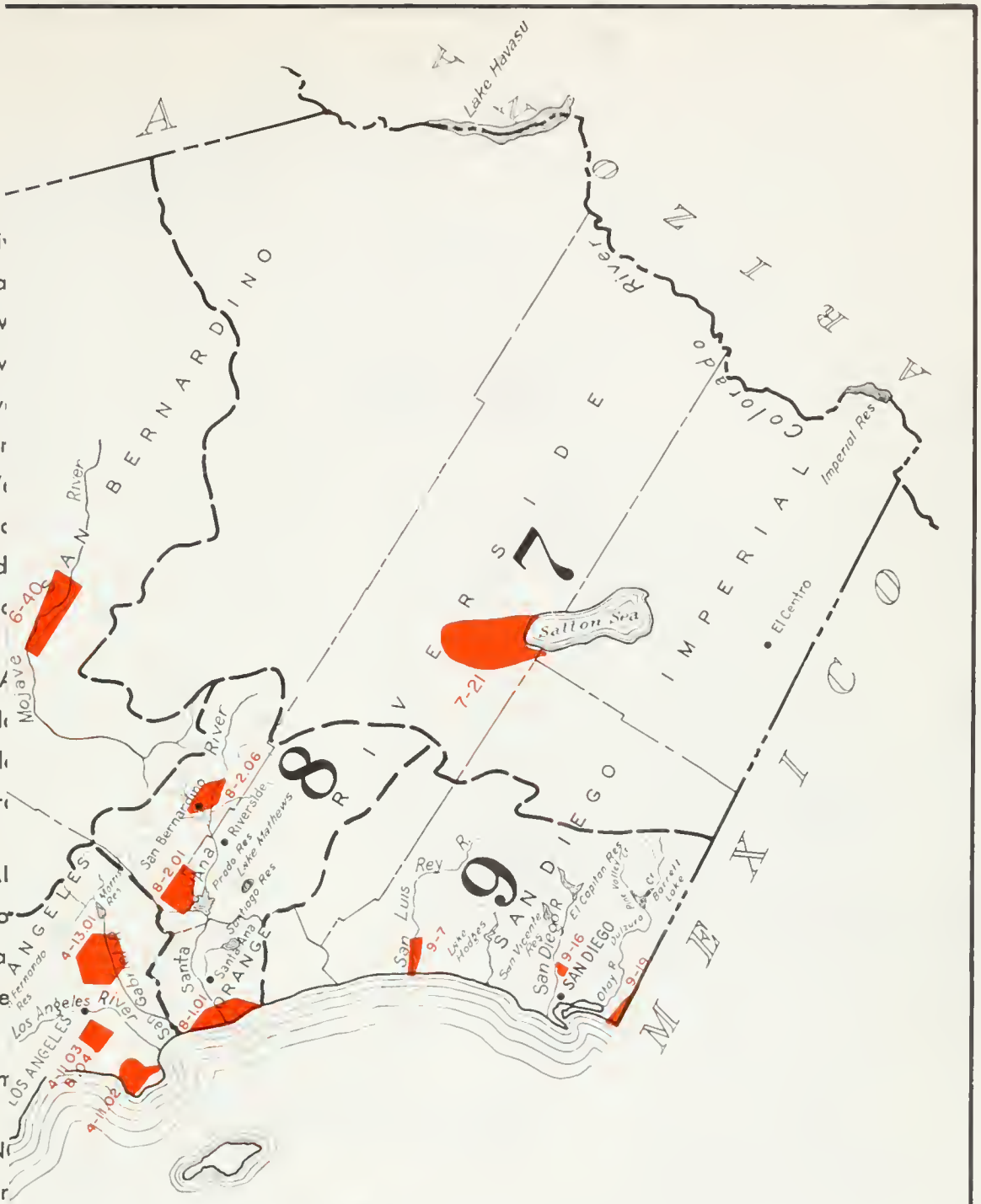
Tia Juana Basin, the most southerly ground water basin in the San Diego Region, is situated approximately 15 miles south of the City of San Diego. The ground water basin extends along the Tia Juana River into Mexico. The Tia Juana Basin, as referred to herein, includes only the portion within California. This basin is about 5 miles in length, averages 1.5 miles in width and has an area of approximately 7 square miles.

Data obtained in other investigations indicate that ground water storage capacity in Tia Juana Basin is quickly filled during periods of above-average rainfall and runoff. During ensuing periods of drought, when use from the ground water basin exceeds supply, ground water levels in the lower portion of the valley are drawn below sea level. During the period since 1947, quality degradation has been noted in waters from several wells in the coastal area. The coastal portion of this valley was included in the monitoring program in 1953 to determine the extent and rate of ground water deterioration. A shallow unconfined zone and a lower confined zone occur in the monitored portion of the valley.

Ground water in Tia Juana Basin is of sodium chloride type, and although of relatively inferior quality, is being used for both domestic and agricultural purposes. The poor quality of this ground water may be due to adverse salt balance, reuse of water, sea-water intrusion, inflow of connate water from older sediments flanking and underlying the valley, or a combination of these conditions.

The analyses of 20 samples collected from 12 wells during 1957 show a chloride range from 406 to 4,789 ppm. Total dissolved solids content ranged from 1,420 to 11,180 ppm. Nine of the twelve monitoring wells in the basin show a progressively poorer quality of water with time. Well 19S/2W-5C6 showed a chloride content of 649 ppm in August, 1953, 724 ppm in

September, 1953, 1,163 ppm in April, 1955, 3,540 ppm in July, 1956, and 4,430 ppm in October, 1957. This increase may be due to sea-water intrusion. Well 19S/2W-2E1, which is almost four miles inland, showed a chloride content of 638 ppm in 1953, and increased to 862 ppm in 1957. This is believed to be primarily due to adverse salt balance within this basin.



NORTH

1-1 Smith Ri

1-3 Butte Va

1-4 Shasta V

1-5 Scott Riv

1-8 Mad Riv

1-10 Eel River

1-15 Ukiah V

1-16 Sanel Va

1-17 Alexand

1-18 Santa Ro

SAN FRA

2-9a Santa Cl

2-9b Santa Cl

2-10 Livermor

CENTRAL

3-2 Pajaro

3-4 Salina

3-7 Carme

3-12 Santa

3-13 Cuyam

LOS AN

4-4.01 Oxnar

4-11.02 West C
Arec
Torr
Athe

4-11.03 Centra
4-11.04 sure
Fore

4-13.01 Main S

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS IN CALIFORNIA

MONITORED AREAS

1957

SCALE OF MILES

10 0 10 20 30 40 50

INDEX TO AREAS

NORTH COASTAL REGION (No. 1)

1-1	Smith River Plain
1-3	Butte Valley
1-4	Shasta Valley
1-5	Scott River Valley
1-8	Mad River Valley
1-10	Eel River Valley
1-15	Ukiah Valley
1-16	Sonel Valley
1-17	Alexander Valley
1-18	Santa Rosa Valley

SAN FRANCISCO BAY REGION (No. 2)

2-9a	Santa Clara Valley, East Bay Area
2-9b	Santa Clara Valley, South Bay Area
2-10	Livermore Valley

CENTRAL COASTAL REGION (No. 3)

3-2	Pajaro Valley
3-4	Salinas Valley
3-7	Carmel Valley
3-12	Santa Maria River Valley
3-13	Cuyama Valley

LOS ANGELES REGION (No. 4)

4-4.01	Oxnard Plain Pressure Area
4-11.02	West Coast Basin Area of Sea-Water Intrusion Torrance Area Athens Area
4-11.03 4-11.04	Central Coastal Plain Pressure Area and Los Angeles Forebay Area
4-13.01	Main San Gabriel Basin

CENTRAL VALLEY REGION (No. 5)

5-13	Upper Lake Valley
5-15	Kelseyville Valley
5-21a	Sutter County
5-21b	Yolo County, Capay Valley
5-21c	Sacramento County
5-22a	San Joaquin County
5-22b	Stanislaus County
5-22c	Merced County
5-22d	Madera County
5-22e	Fresno County
5-22f	Kern County

LAHONTAN REGION (No. 6)

6-40	Lower Mojave River Valley, Barstow to Yermo

COLORADO RIVER BASIN REGION (No. 7)

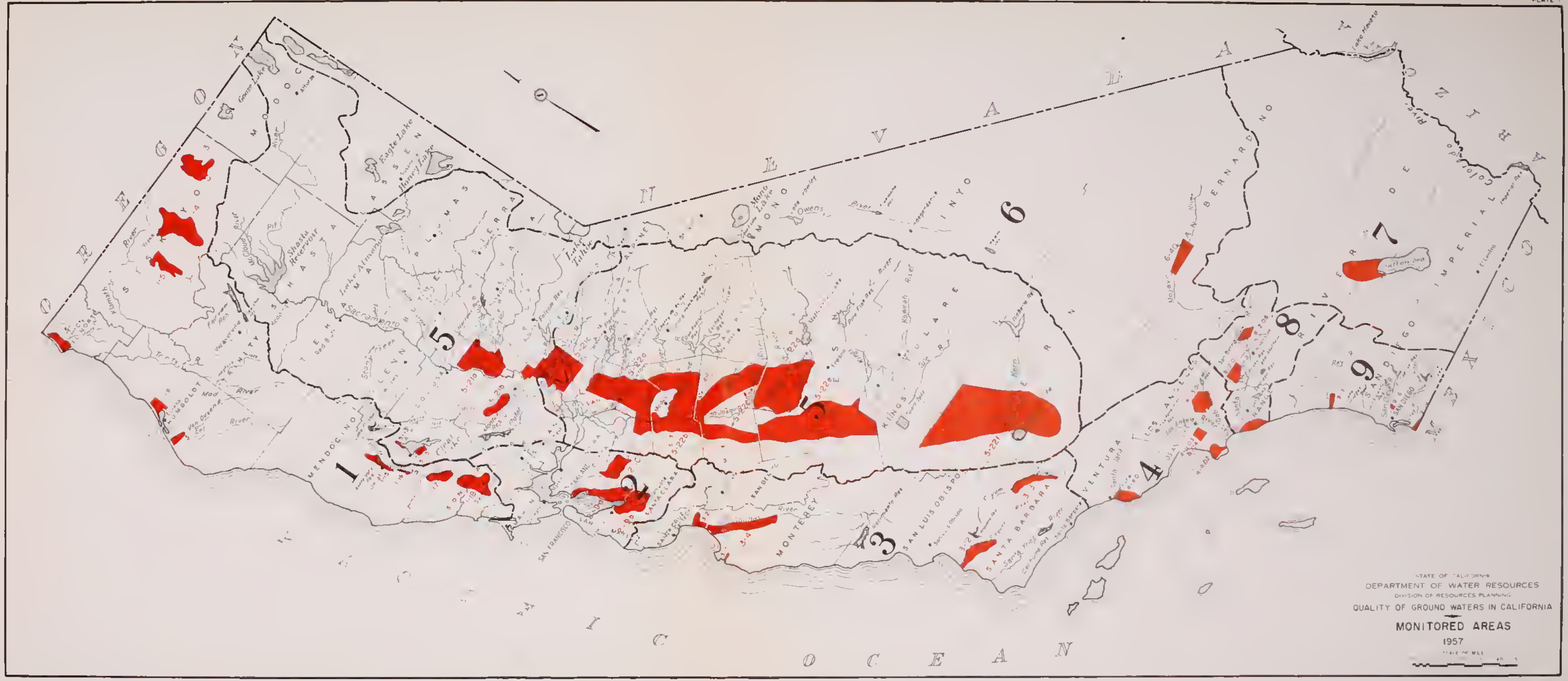
7-21	Coachella Valley

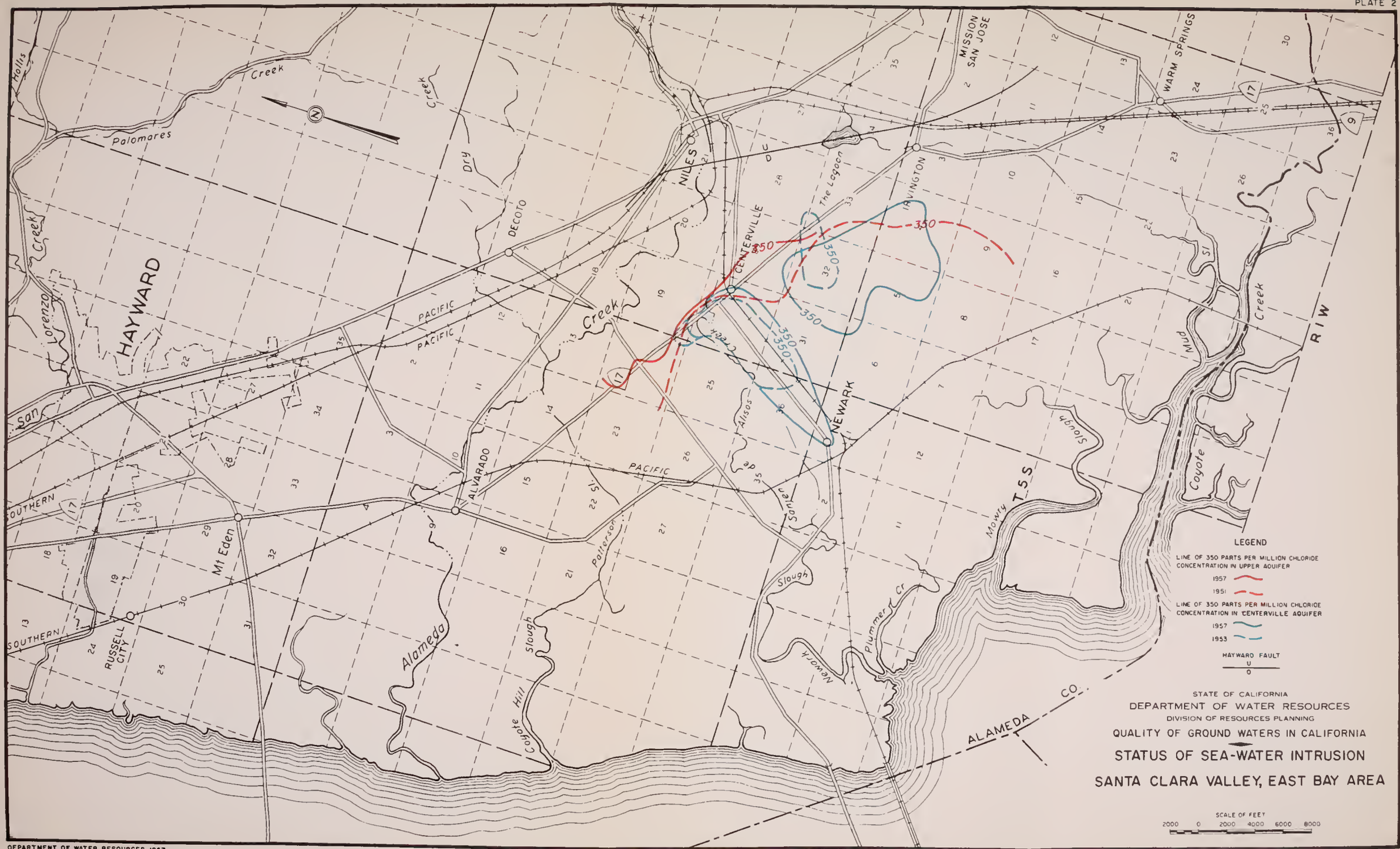
SANTA ANA REGION (No. 8)

8-1.01	East Coastal Plain Pressure Area
8-2.01	Chino Basin
8-2.06	Bunker Hill Basin

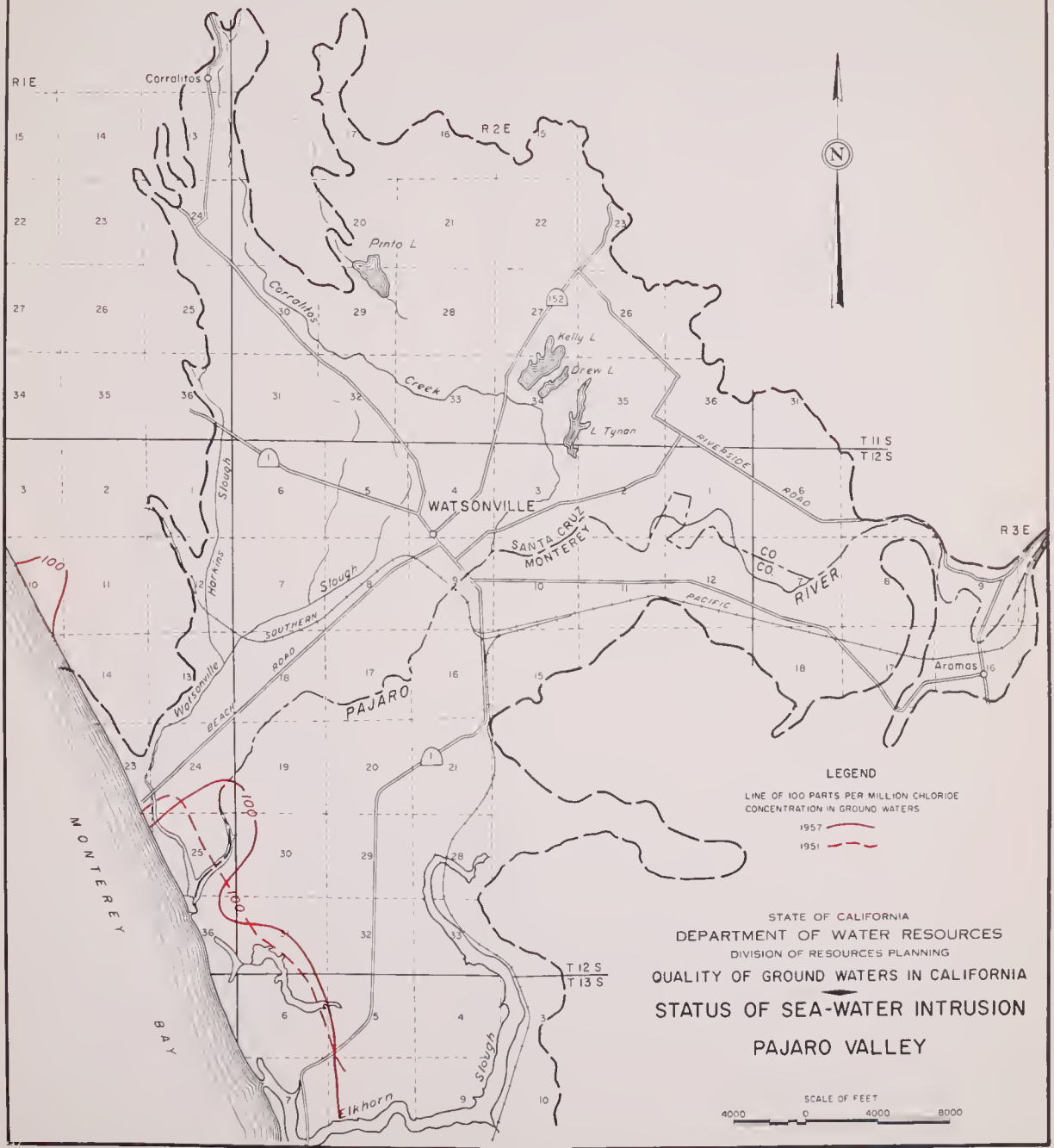
SAN DIEGO REGION (No. 9)

9-7	San Luis Rey Valley
9-16	El Cajon Valley
9-19	Tia Juana Valley Basin

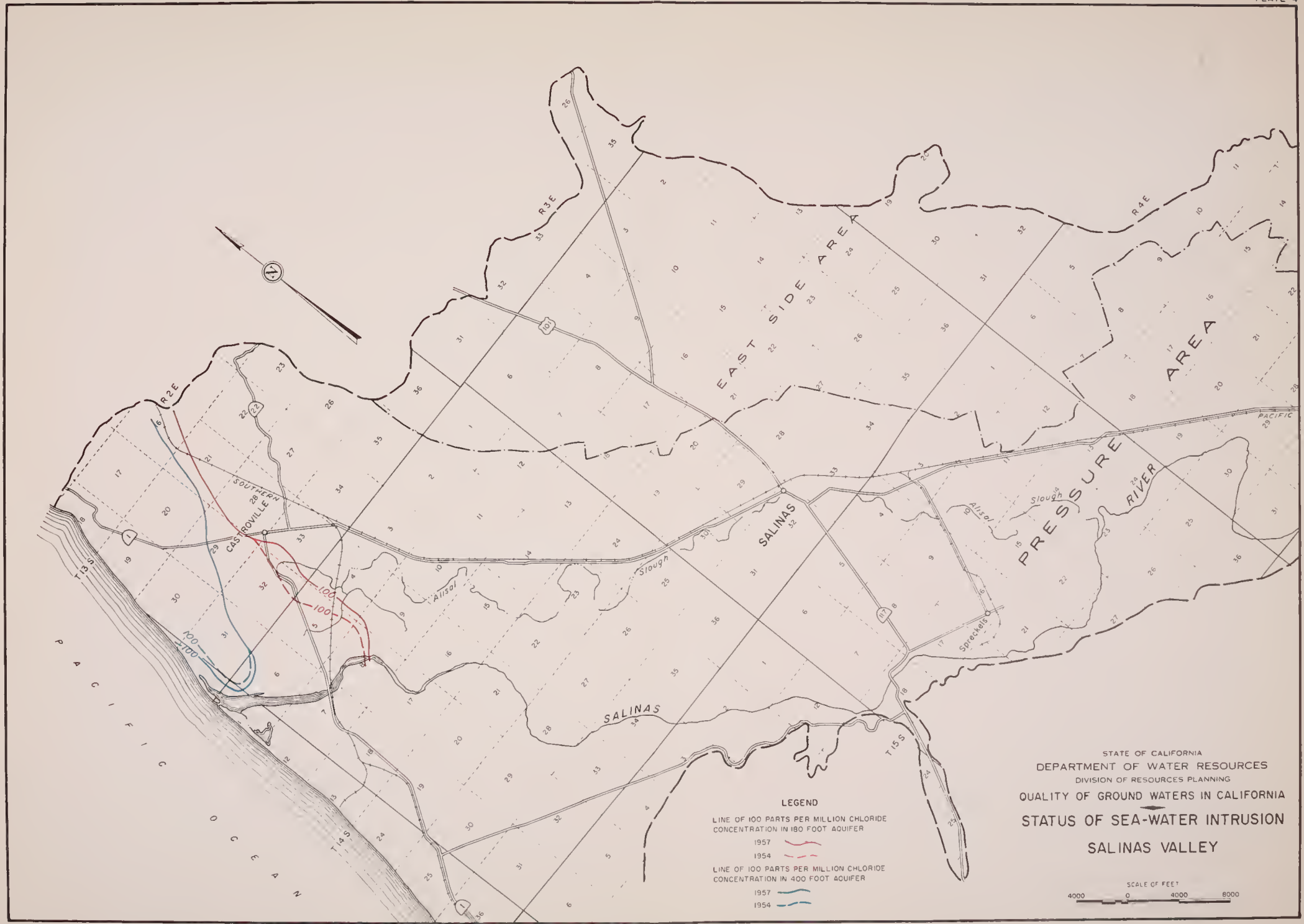




DEPARTMENT OF WATER RESOURCES 1957



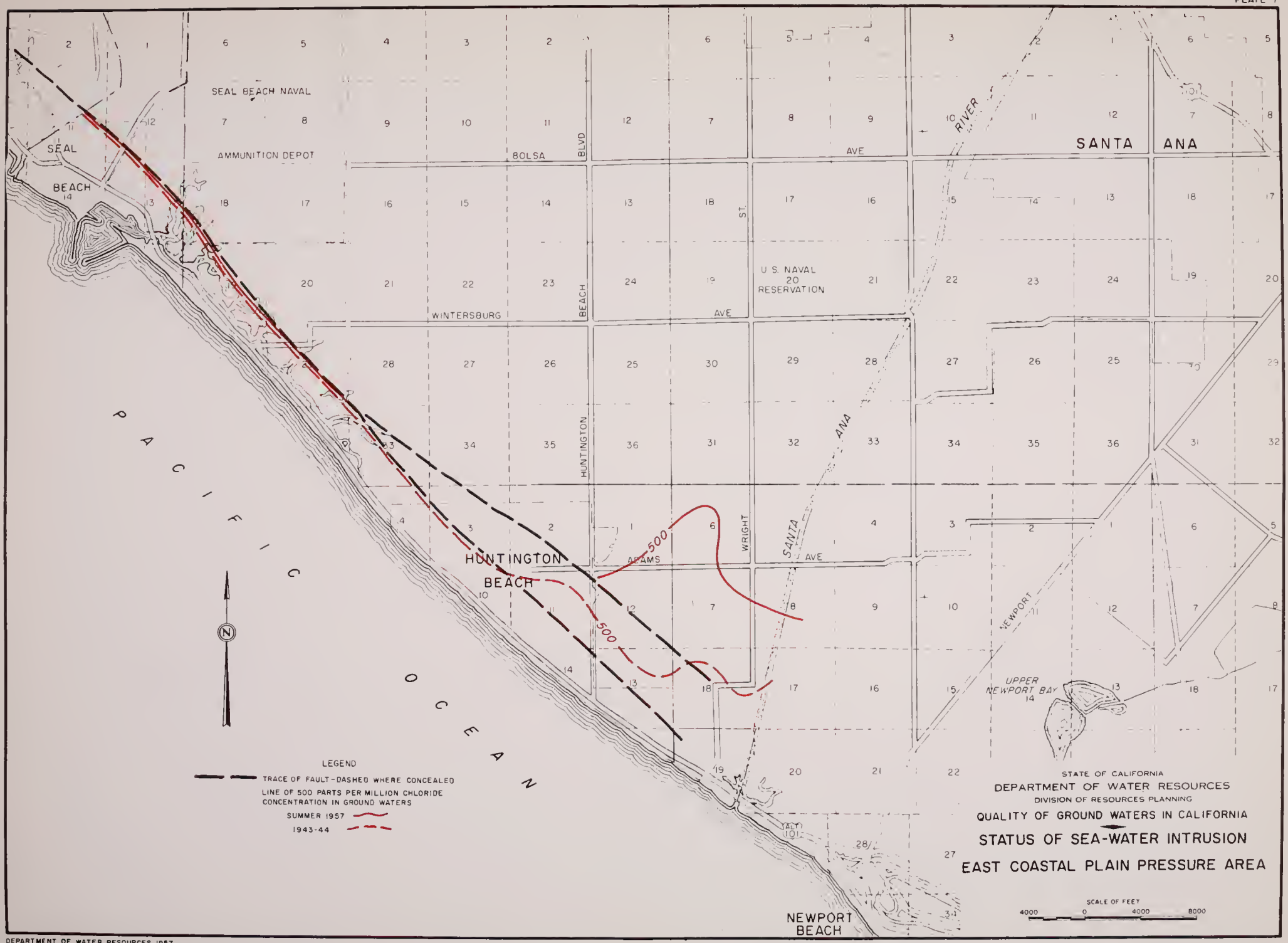
DEPARTMENT OF WATER RESOURCES 1957



DEPARTMENT OF WATER RESOURCES 1957

DEPARTMENT OF WATER RESOURCES 1957

DEPARTMENT OF WATER RESOURCES 1957



DEPARTMENT OF WATER RESOURCES 1957

APPENDIX A

MONITORING AREA INFORMATION

NUMBER OF MONITORING WELLS AND SAMPLING TIMES
1957

Monitored Area	No. of Wells	Sampling Time
NORTH COASTAL REGION (No. 1)		
Smith River Plain (1-1)	15	September and December
Butte Valley (1-3)	10	August
Shasta Valley (1-4)	6	March and July
Scott River Valley (1-5)	4	July
Mad River Valley (1-8)	6	February and December
Eel River Valley (1-10)	11	October
Ukiah Valley (1-15)	11	August
Sanel Valley (1-16)	6	August
Alexander Valley (1-17)	9	January
Santa Rosa Valley (1-18)	20	January
SAN FRANCISCO BAY REGION (No. 2)		
Santa Clara Valley (2-9)		
East Bay Area (2-9a)	15	August and September
South Bay Area (2-9b)	17	August
Livermore Valley (2-10)	45	February through October
CENTRAL COASTAL REGION (No. 3)		
Pajaro Valley (3-2)	25	August
Salinas Valley (3-4)	47	June and July
Carmel Valley (3-7)	7	August
Santa Maria River Valley (3-12)	10	November
Cuyama Valley (3-13)	6	September
LOS ANGELES REGION (No. 4)		
Oxnard Plain Area (4-4.01)	20	April and November
West Coast Basin (4-11.02)		
Area of Sea-Water Intrusion	6	February through December
Torrance Area	5	January through December
Athens Area	7	February
Central Coastal Plain Pressure and Los Angeles Forebay Area (4-11.03 and 4-11.04)	6	May and December
Main San Gabriel Basin (4-13.01)	11	June and December
CENTRAL VALLEY REGION (No. 5)		
Upper Lake Valley (5-13)	2	July
Kelseyville Valley (5-15)	10	July
Sacramento Valley (5-21)		
Sutter County (5-21a)	33	July
Yolo County, Capay Valley (5-21b)	9	July
Sacramento County (5-21c)	27	July

NUMBER OF MONITORING WELLS AND SAMPLING TIMES
1957
(continued)

Monitored Area	No. of Wells	Sampling Time
CENTRAL VALLEY REGION (No. 5) cont'd		
San Joaquin Valley (5-22)		
San Joaquin County (5-22a)	43	June through November
Stanislaus County (5-22b)	45	June through September
Merced County (5-22c)	41	July through September
Madera County (5-22d)	28	July
Fresno County (5-22e)	67	July
Kern County (5-22f)	42	July and August
LAHONTAN REGION (No. 6)		
Lower Mojave River Valley, Barstow to Yermo (6-40)	12	May through December
COLORADO RIVER BASIN REGION (No. 7)		
Coachella Valley (7-21)	12	March and September
SANTA ANA REGION (No. 8)		
East Coastal Plain Pressure Area (8-1.01)	18	June and September
Chino Basin (8-2.01)	9	June and December
Bunker Hill Basin (8-2.06)	8	February through December
SAN DIEGO REGION (No. 9)		
San Luis Rey Valley (9-7)	11	June and October
El Cajon Valley (9-16)	12	July and October
Tia Juana Basin (9-19)	12	July and October

GENERAL INFORMATION ON MONITORED AREAS
1957
NORTH COASTAL REGION No. 1

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Smith River Plain (1-1)	The principal source of ground water in the Crescent City area is the marine terrace deposits of the Battery formation. River terrace and flood plain deposits along the Smith River are locally important sources. Aquifers of the area are interconnected and unconfined.	Moderate to extensive development for irrigation, municipal, domestic, and stock water supplies. Ground water meets half of water requirements and is supplemented by surface water. Yields of wells range from about 20 gallons per minute (gpm) for wells in the marine formation to 340 gpm in the stream channel and flood plain deposits.
Butte Valley (1-3)	The valley is a large structural depression developed in a volcanic region and was formerly the site of a Pleistocene lake. Ground water is contained in various lava flows and to a lesser extent in alluvial, glacio-fluvial, and lake deposits. Except for local confinement, aquifers of this area are interconnected and unconfined.	Moderate to extensive development for irrigation, domestic, and stock watering supplies. The fine-grained, relatively impermeable sediments do not yield large amounts of water. Along the eastern border of the valley irrigation wells yield 900 to 3,000 gpm.
Shasta Valley (1-4)	Ground water is contained principally in the Pluto's Cave Basalt, which is a strongly jointed, black volcanic rock, and is also contained in lenses of coarser grained young alluvium. Other less important water bearing formations include older alluvium, glacial deposits, the Umpqua formation, and other volcanic rocks. Except for local confinement in the volcanics, ground water is unconfined.	Moderate to extensive development for domestic and stock watering needs. There is only limited development for irrigation and municipal needs. Well yields range from 120 to 4,000 gpm and average about 1,300 gpm.

GENERAL INFORMATION ON MONITORED AREAS

1957

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Scott River Valley (1-5)	The only water-bearing formation of importance is the younger alluvium comprised of stream channel, flood plain, and alluvial fan deposits. The most permeable deposits are located between Ft. Jones and Etna. Confinement occurs in the west side alluvial fans; otherwise, ground water is unconfined.	Ground water forms only a small portion of the total amount of water used. Although there is moderate to extensive development for domestic and stock supplies, there is only limited development for irrigation. Yield of irrigation wells located in the stream channel and flood plain deposits range from 1,250 to 2,500 gpm.
Mad River Valley (1-8)	Alluvium constitutes the major source of ground water and includes stream terrace, flood plain, and estuarine deposits; other water-bearing formations include the semi-consolidated Hookton formation and dune sand. Confined ground water occurs in the Hookton formation, which consists of continental and marine deposits.	Slight to moderate development principally for domestic and irrigation supplies. Other uses are for municipal and industrial requirements. Wells yield up to 100 gpm.
Eel River Valley (1-10)	The major source of ground water is the alluvium. Secondary sources include dune sand and older semi-consolidated sediments. Confined aquifers occur in the older sediments and unconfined conditions exist in the alluvium.	Moderate to extensive development for domestic, irrigation, and some municipal use. Wells in the older formations yield up to 30 gpm and more than 600 gpm from the alluvium.

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Ukiah Valley (1-15)	The major source of ground water is the alluvium comprised of flood plain, stream terrace, and channel deposits. Semi-consolidated older sediments exposed on the edges of the valley constitute a secondary source. Aquifers in this area are unconfined.	Slight to moderate development for domestic and industrial use, and some for irrigation. The terrace deposits yield up to 15 gpm. Wells in alluvium yield from 50 to 200 gpm.
Sanel Valley (1-16)	The principal aquifer is the unconsolidated alluvium deposited by the Russian River. Ground water is generally unconfined except for local pressure effects.	Slight to moderate development for irrigation, domestic, and municipal requirements. Wells located in terrace deposits yield from 5 to 50 gpm and those in coarse alluvium yield from 750 to 1,250 gpm.
Alexander Valley (1-17)	The principal aquifers are the younger alluvium and the Glen Ellen formation; older consolidated and volcanic rocks produce meager yields of local importance.	Moderate development for domestic purposes, and limited development for irrigation needs. The alluvium yields from 200 to 500 gpm, and the Glen Ellen produces up to 400 gpm.
Santa Rosa Valley (1-18)	The principal sources of ground water include the Sonoma volcanics, the Glen Ellen formation, and the Merced formation. Local confinement is common due to geologic structure and variable lithology.	Extensive development for domestic, municipal, industrial, irrigation, and stock watering use. Wells in the area yield up to 1,500 gpm.

GENERAL INFORMATION ON MONITORED AREAS

1957

SAN FRANCISCO BAY REGION NO. 2

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Clayton Valley (2-5)	Chief sources of ground water are the Recent alluvium and the Pittsburg formation underlying Clayton Valley. The Concord fault forms a hydrologic barrier between Clayton Valley and Ygnacio Valley. Several pressure depth zones probably once existed, but deepening of wells and increased pumping resulted in pressure relief and the ground water reservoir functions as free ground water.	Limited development and use of ground water for irrigation and domestic supplies. The yield of wells is not known, although only moderate at best.
Ygnacio Valley (2-6)	Recent alluvium and the Pittsburg formation are the water bearing units. Initially, several pressure zones existed; however, deepening of wells and increased pumping has caused the ground water reservoir to function as unconfined. Water levels were, at one time, lower on the Ygnacio Valley side of the hydrologic barrier.	Limited development and use of ground water for irrigation and domestic supplies. The yield of wells is not known, although only moderate at best.

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Santa Clara Valley East Bay Area (2-9a)	In this area ground water is contained chiefly in alluvial deposits interfingered with bay deposits. At least two major water-bearing zones occur, each distinguishable by its hydraulic character. The upper zone is unconfined along the hills and confined towards the bay, whereas the lower zone is wholly confined. However, at least three additional aquifers occur in the lower zone of the Niles cone. Semi-consolidated continental deposits of Plio-Pleistocene age exposed near Mission San Jose and dipping beneath the alluvium constitute a secondary aquifer and are probably of importance to the very deep wells of the entire area. The Niles, San Lorenzo and San Leandro alluvial cones support the greatest ground water development because of their large deposits of permeable materials. North of Alvarado, the San Lorenzo and San Leandro cones supply most of the ground water; to the south, the Niles cone is the chief source area of ground water.	Extensive development for all uses but principally for urban, irrigation and industrial requirements. Wells range from low yield small domestic wells to large irrigation and industrial wells that produce up to 2,000 gpm.
Santa Clara Valley South Bay Area (2-9b)	Since this area is contiguous to the East Bay area, the occurrence of ground water is similar. The Plio-Pleistocene deposits are utilized more due to their greater extent and thickness, although the alluvium supplies a large portion of the ground water. In general, an upper and lower aquifer are recognized. The lower aquifer yields most of the water pumped in this area.	Extensive development since ground water supplies about 95 per cent of water requirements. The principal uses are for agriculture, public supply, and industry. Well yields range from a few gpm to over 1,700 gpm. Large deep wells average over 500 gpm.

GENERAL INFORMATION ON MONITORED AREAS

1957

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Livermore Valley (2-10)	The geological structure of Livermore Valley is complicated by numerous faults that affect the quality and movement of ground water. Sources of ground water include stream, flood-plain, shallow lake deposits of Recent age, and the Livermore formation which is composed of older semi-consolidated alluvial deposits. The Livermore formation exhibits both confined and unconfined ground water characteristics. Deposits of Recent alluvium comprise the chief aquifer and contain unconfined ground water, except in the vicinity of Pleasanton where lacustrine clays confine permeable beds. In some areas, wells derive most or all of their supply from the Livermore formation.	Moderate to extensive development, as virtually all water utilized is supplied by ground water. Well yields are small near the perimeter of the valley and increase toward the center of the valley; yields range from less than 10 gpm to about 2,000 gpm.

GENERAL INFORMATION ON MONITORED AREAS
1957
CENTRAL COASTAL REGION NO. 3

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Pajaro Valley (3-2)	Sources of ground water are Quaternary continental sediments interfingered with marine sediments, dune sands, and poorly consolidated older sediments. The ground water body is divided areally into a forebay area, an upper pressure area, and a valley floor pressure area. One shallow unconfined zone and two lower confined zones have been identified. The main pumping zone lies between 100 and 300 feet, and the aquifers extend beneath and are open offshore to the sea floor.	Moderate to extensive development for all purposes since there is only a small surface supply. Irrigation consumes the largest amount of ground water. Wells range from small capacity domestic wells to large irrigation wells yielding more than 1,000 gpm.
Salinas Valley (3-4)	Ground water is contained chiefly in the valley fill deposits which consist of alluvium grading into marine deposits toward Monterey Bay. The aquifers are open to the sea where the continental shelf is incised by submarine canyons. An upper unconfined aquifer and two lower confined aquifers, respectively known as the 180-foot aquifer and the 400-foot aquifer, occur in Lower Salinas Valley. The 400-foot aquifer is part of the Paso Robles formation which is exposed along the valley margins.	Extensive development for irrigation, and domestic needs; moderate development for stock watering, municipal, and industrial supplies. Wells range from low capacity domestic wells to large irrigation wells that produce up to 3,700 gpm.

GENERAL INFORMATION ON MONITORED AREAS

1957

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Carmel Valley (3-7)	Ground water is derived from the alluvium deposited in Carmel Valley. The water-bearing deposits are generally thin but thicken to almost 100 feet as they extend out beneath Monterey Bay. The aquifers are interconnected and unconfined.	Moderate development for irrigation and domestic supplies and some stock watering use. Yield of wells ranges from about 10 to 375 gpm.
Santa Maria Valley (3-12)	Chief sources of ground water are the unconsolidated sediments of Plio-Pleistocene and Recent age, namely, the Paso Robles formation, the Orcutt formation, and the Recent alluvium. The ground water is contained in a single large reservoir, which is unconfined in the eastern three-fourths of the basin and confined by fine grained alluvial deposits near the ocean.	Extensive development for irrigation and some development for public supply and industrial requirements. Wells yield from about 300 to 2,200 gpm and average about 1,000 gpm.
Cuyama Valley (3-13)	Ground water occurs principally in the alluvium and older continental sediments. The alluvium is most important in the western part of the basin, whereas the older deposits are important in the eastern portion; however, many wells are perforated in both. Except for small areas in the south central part, the basin is considered to be unconfined.	Extensive development for irrigation; other minor uses are domestic and stock watering. Well yields range from less than 600 gpm to 4,400 gpm and average about 1,000 gpm.

GENERAL INFORMATION ON MONITORED AREAS

1957

LOS ANGELES REGION NO. 4

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Oxnard Plain Pressure Area (4-4.01)	Continental and marine sediments are the chief sources of ground water in this area; however, a few wells are supplied from fractured Tertiary volcanic rocks. The main water-bearing zones are called, in order of depth, the Oxnard, the Mugu, and the Fox Canyon aquifers, all of which are open to the sea. Most wells in this area obtain water from the Oxnard aquifer. The aquifers in this area are confined.	Extensive development to serious overdraft on the ground water reservoir. Ground water is utilized for agriculture, urban development, military installations and industry. Wells yield from 900 to 1100 gpm.
West Coast Basin (4-11.02)	The principal water-bearing deposits, of Pleistocene and Recent Age, consist of fluvial sediments comprised of a number of rather distinct water-bearing zones called the Gaspur water bearing zone, the "200-foot sand", the Gardena water-bearing zone, the "400-foot gravel", and the Silverado water-bearing zone. Ground water in most of the area is confined by clays and silts. Faults cutting the aquifers retard ground water inflow from the east. Merging of aquifers occurs along the east side and in the western half of the basin. The seaward extension of the Silverado and other merged zones is open to the sea.	Extensive development for municipal, industrial, irrigation, and domestic supplies. Overdraft is of major proportions. Ground water meets about 60 per cent of water requirements which necessitates the importation of supplemental supplies. Yields of wells range from 300 to 2,000 gpm, and averages about 500 gpm.

GENERAL INFORMATION ON MONITORED AREAS

1957

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Central Coastal Plain - Pressure Area and Los Angeles Forebay Area (4-11.03&4-11.04)	The principal source of ground water is from sediments of Pleistocene and Recent age. Clay strata overlie and confine the aquifers in the pressure area. The forebay area is unconfined.	Moderate to extensive development for municipal, industrial, and irrigation needs and only limited development for domestic use. Water requirements far exceed the available ground water supply, resulting in extensive use of imported water supplies. Wells yield up to 5,000 gpm and average about 600 gpm.
Main San Gabriel Basin (4-13.01)	Alluvial sediments of Pleistocene and Recent age comprise the principal aquifer. The ground water reservoir is essentially unconfined.	Development moderate to extensive, principally for municipal, irrigation, and industrial supplies. Ground water meets the water requirements. Wells yield up to 5,500 gpm and average about 1,000 gpm.

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Upper Lake Valley (5-13)	Unconsolidated to poorly consolidated sediments deposited in Clear Lake during Quaternary time and alluvium comprise the principal aquifers of the area. Ground water occurs in strata and lenticular beds of sand and gravel. Fine grained lake sediments confine the aquifers in the lower portion of the valley.	Moderate to extensive development for irrigation, domestic, and stock watering needs. Wells in the areas of unconfined ground water yield an average of about 350 gpm, whereas wells in the confined area yield about 230 gpm.
Kelseyville Valley (5-15)	Conditions of ground water occurrence are similar to Upper Lake Valley. Volcanic detritus comprises a notable portion of the water bearing sediments. Confinement occurs in aquifers beneath Clear Lake and extends inland a distance of about one mile.	Extensive development for irrigation, domestic, and stock watering needs. Overall average yield of wells is approximately 450 gpm. Wells located in the confined area have slightly higher yields than those in the unconfined area.
Sacramento Valley Sutter County (5-21e)	Principal source of ground water is the alluvium deposited during Pleistocene to Recent times. The wells of large yield are generally located in the permeable floodplain deposits. Deep wells in the eastern portion of the area produce water from Pliocene volcanic sands and gravels. In general, the aquifers are unconfined but there are some zones and areas of partial confinement.	Extensive development for all consumptive uses to the point of overdraft on the ground water supply. Wells west of the Feather River yield an average of about 800 gpm. South of the Bear River, wells yield about 950 gpm.

GENERAL INFORMATION ON MONITORED AREAS

1957

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Yolo County (5-21b) Capay Valley	The principal aquifer comprises the stream channel and terrace deposits composed of unconsolidated silt, sand, and gravel of Recent age. The Tehama formation, a Plio-Pleistocene formation of continental origin, is a secondary aquifer. The alluvial deposits are unconfined, but the Tehama is locally confined. Only the Recent stream channel and terrace deposits are of importance in Capay Valley.	Moderate development for irrigation, domestic, and stock watering needs. Most of the wells are shallow domestic wells which produce up to 60 gpm.
Sacramento County (5-21c)	Recent alluvium and semi-consolidated Plio-Pleistocene continental sediments comprise the principal aquifers. Tertiary volcanics are of local importance in the eastern portion of the county. The aquifers are generally unconfined. Perched water bodies are locally common.	Moderate development for municipal, irrigation, industrial and domestic supplies. Use of ground water in the areas adjacent to the rivers is minimized by the availability of inexpensive surface water. Average yield of wells in this area is about 400 gpm.
San Joaquin Valley San Joaquin County (5-22a)	The principal sources of ground water are unconsolidated alluvium and Tertiary and Quaternary continental sediments. A sedimentary volcanic formation called the Mehrten formation is an important aquifer in the eastern part of the valley. Fine grained delta deposits impede movement of ground water across the delta. A confined deep zone occurs in the Tracy area, otherwise, the aquifers are essentially unconfined or locally confined.	Extensive development for all requirements. Approximately 70 per cent of the ground water pumped is utilized for irrigation. The Mehrten formation is reported to produce up to 1,350 gpm, and the alluvial sediments produce over 2,000 gpm.

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Stanislaus County (5-22b)	Recent alluvium and the underlying Pliocene to Pleistocene Modesto, Riverbank, and Turlock Lake formations are the principal water-bearing units. An upper and lower water-bearing zone has been differentiated. An extensive diatomaceous silty clay called the "Corcoran Clay" confines lower zone water. This clay bed occurs only in the southern portion of the county and becomes discontinuous or is missing in the other areas of the county. Older formations of continental origin are locally important aquifers in and near the eastern foothills.	Extensive development for industrial and municipal needs, but only moderate development for irrigation. Large irrigation wells on the valley floor yield more than 1,000 gpm.
Merced County (5-22c)	Occurrence of ground water is similar to Stanislaus County; however, the confining clay member is more widespread, and occurs beneath most of the central part of the area. The confining bed pinches out east of Merced and Cressey, and west of Gustine.	Moderate development for domestic and irrigation needs. Ground water is the principal source of municipal and industrial supplies. Yields of irrigation wells range from about 500 to more than 3,000 gpm and the average is about 1,400 gpm. Distribution of wells is closely related to areas of inadequate surface supplies.

GENERAL INFORMATION ON MONITORED AREAS

1957

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Madera County (5-22d)	The confining clay which separates the water-bearing materials and confines the lower zone, occurs beneath the western portion of the county and pinches out about 3 miles west of Madera.	Extensive development of ground water for all requirements. Domestic, municipal, and industrial needs are largely met by subsurface supplies. Large capacity wells are capable of yielding at least 1,000 gpm.
Fresno County (5-22e)	Most of the monitored area includes only the west side of the valley where the upper zone water is markedly different from upper zone east side water. Most of the deep wells are perforated in both the upper and lower zones. Tracing of the confining clay member shows the sediments to be downwarped into an asymmetrical syncline whose western limb is steeply tilted. Depth to the confining clay ranges to 900 feet below land surface.	Nearly all water requirements are met by ground water on the west side. The chief use is for irrigation; other uses include domestic, industrial, and stock watering. The ground water supply of this area is overdrawn. Both upper and lower zone wells yield about 1,300 gpm.
Kern County (5-22f)	The confining clay bed pinches out or becomes discontinuous south of a line between Buttonwillow and Delano. However, confinement outside of the confining clay area occurs as the result of fine grained lake sediments of Buena Vista and Kern Lakes, and also due to ·ly sorted, fine-grained alluvial deposits. ·nfined to semi-confined ground water overlies the confined areas.	Extensive development for all uses to the extent of overdrawing the ground water reservoir. Well yields range from 100 to 2,000 gpm.

GENERAL INFORMATION ON MONITORED AREAS
1957
LAHONTAN REGION NO. 6

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Lower Mojave River Valley (6-40)	Recent alluvial deposits of the Mojave River constitute the principl aquifer which is unconfined and is underlain and flanked in some areas by older deposits which also yield considerable water to wells.	Moderate to extensive development sufficient to meet all current needs. Principal use is for public supply. Other important uses are railroad and military. Irrigation well yields range from 300 to 3,000 gpm.

GENERAL INFORMATION ON MONITORED AREAS
1957
COLORADO RIVER BASIN REGION NO. 7

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
Coachella Valley (7-21)	The water-bearing deposits consist of unconsolidated sand, gravel, and silt capped in the lower portion of the valley by fine-grained lake bed sediments. Flowing wells exist in the area overlain by the lake bed sediments. A shallow perched zone, recharged by accumulated return flow, lies above the main aquifer.	Limited to moderate development as the ground water supply is supplemented by local and imported surface supplies. Wells yield up to 2,080 gpm.

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
East Coastal Basin Pressure Area (8-1.01)	The major water-bearing deposits include continental and marine sediments of Recent, Pleistocene and Pliocene age. In general, the sediments occur as interfingering lenses of gravel, sand, silt, and clay. The Recent deposits which occur in the gap areas contain the Talbert water-bearing zone and the"80-foot gravel". Three water-bearing zones have been differentiated in the Pleistocene sediments, and one in the Pliocene sediments. The Newport-Inglewood uplift parallels the coast about one half mile inland and retards lateral movement of ground water in the older sediments but not in the Recent sediments.	Extensive development mainly for irrigation. Other uses include municipal, industrial, and domestic purposes. Ground water supplies meet only a portion of water requirements. Wells yield up to 1,000 gpm from the Recent alluvium and more than 2,000 gpm from the Pleistocene sediments.
Chino Basin (8-2.01)	Recent alluvium and older alluvial sediments comprise the principal aquifers of the basin. The coarsest gravels occur along the northern margin of the basin. Although deep wells tap confined ground water along the southwestern margin of the basin, most of the basin is unconfined.	Extensive development for all uses but principally for irrigation. Ground water supplies meet only a portion of the present requirements. Yield of wells range from 150 to 1,800 gpm.
Bunker Hill Basin (8-2.06)	The principal sources of ground water are the Recent and older alluvium comprising the valley fill. In the southwest portion, relatively impermeable sediments interbedded with permeable strata create a pressure area in which wells flowed during wet years.	Extensive development principally for irrigation and municipal needs; other uses include domestic and industrial requirements. Well yields range from 180 to 1,140 gpm.

GENERAL INFORMATION ON MONITORED AREAS
1957
SAN DIEGO REGION NO. 9

Monitored Area	Occurrence of Ground Water	Development and Use of Ground Water
San Luis Rey Valley (9-7)	Unconsolidated Recent alluvial deposits along the course of the San Luis Rey River constitute the principal source of ground water. The water-bearing sediments are unconfined and extend off-shore. The principal pumping zone consists of about 100 feet of highly permeable sands and gravel occurring beneath a section of fine silt, sand, or clay.	Ground water is extensively utilized for irrigation and municipal needs and to a lesser extent, for domestic uses. Overdraft exists along the coastal portion. Well yields range up to 2,180 gpm and average 500 gpm.
El Cajon Valley (9-16)	Ground water is obtained principally from fractured and weathered zones in crystalline rocks. The Tertiary sediments in the area are poorly permeable and yield very little water.	Development of ground water principally for domestic use and, to a small extent, for irrigation and municipal supplies. Well yields range from 1 to 300 gpm.
Tia Juana Valley (9-19)	Ground water is derived principally from Recent alluvium underlying the valley. A shallow upper zone and a lower confined zone occur in the monitored portion of the valley.	Extensive development principally for irrigation. Other uses include domestic, municipal and military. Yield of wells ranges from 60 to 1,480 gpm.

APPENDIX B

WELL DATA

Well Numbering System

Wells selected for inclusion in the ground water quality monitoring network are assigned numbers by township, range and section, based upon their location. The numbering system is the same as that utilized by the United States Geological Survey. Under this system each section is divided into 40-acre plots, which are lettered as follows:

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Wells are numbered within each of these 40-acre plots according to the order in which they are located. For example, a well having a number 3N/6E-24A2, MDB&M, is located in Township 3 North, Range 6 East, and in Section 24, Mount Diablo Base and Meridian. It is further identified as the second well located in the 40-acre plot lettered A. Analyses of water samples reported herein are from wells located throughout the State; therefore, they are referenced to Humboldt Base and Meridian and San Bernardino Base and Meridian as well as the Mount Diablo Base and Meridian. The appropriate reference grid is indicated in appendixes B and C in the column headed "State Well Number and Other Number."

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
HB&M		SMITH RIVER PLAIN (1-1)									
16N/1W-22J	0.15 mile east of Highway 101 on Elk Valley Road.	Arlet Short		Dom.		6	30			Yes	Yes
16N/1W-15C1	1.2 mile south of junction of Highways 101 and 199 on west side of 101.	L. L. Early		Dom.		6	30			Yes	Yes
16N/1W-16D1	1.2 mile north of Crescent City on North Crest Drive.	Pine Grove School		Dom.	36	48[c]	15			Yes	Yes
16N/1W-18F1	0.6 mile north of "X" Washington Avenue and "R" Street, east of "R" Street.	North-Cal Plywood Co.		Dom.	54	8	35		No	Yes	Yes
16N/1W-20A2	225 feet north of Coolidge Avenue, 40 feet west of Burchell Street.	Albert Pullen		Dom.			25		No	Yes	Yes
16N/1W-20B1	At foot of Hoover Street, Crescent City.	J. E. Patterson	1952	Dom.		8	41		No	Yes	Yes
16N/1W-20H1	225 feet south of Coolidge Avenue, 75 feet east of Harold Avenue.	Walter Storey	1946	Dom.	40	6	31		No	Yes	Yes
16N/1W-20Q1	75 feet north of Macken Avenue, 75 feet east of Amador Avenue.	Crescent City Water Co.		Mun.		20	31		No	Yes	Yes
16N/1W-21M1	500 feet east of intersection of Highways 101 and 199.	Del Norte County Infirmary		Dom.	19	4	30		No	Yes	Yes
17N/1W-9A1	2.0 mile northwest of Fort Dick on Lowerlake Road.	R. H. Emmerson	1956	Irr.		12	25		No	Yes	Yes
17N/1W-15E1	1.5 miles west of Fort Dick.	Paul E. Johnson		Irr.		12	43		No	Yes	Yes
18N/1W-5G1	650 feet east of Highway 101 and 700 feet south of Gilbert Creek.	Ray W. Stroebing	1952	Dom.		6	60		No	Yes	Yes
18N/1W-17P1	Between Shipashore and Highway 101 at mouth of Smith River.	M. J. Sierka	1955	Dom.		8	54		No	Yes	Yes
18N/1W-26D1	0.25 mile south of Highway 101 on Westbrook Lane.	Arnold Samuelson		Irr.		12	57		No	Yes	Yes
18N/1W-35B1	0.75 mile south of Smith River, 2,200 feet west of Highway 101.	L. L. Borough	1956	Irr.		12	50		Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)
c Dug Well

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		BUTTE VALLEY (1-3)									
45N/1E-2L1	9.0 miles east of Mt. Hebron.	L. D. Parsons	1954	Irr							Yes
45N/1E-9C2	7.5 miles east of Mt. Hebron.	Albert Beck	8-17-54	Irr		16	197		Yes		Yes
46N/1E-15D1	Macdoel	K. Holbrook	1952	Irr		18	265				Yes
47N/1E-29N1	8.0 miles northeast of Macdoel.	F. E. Johnson	1952	Irr		18	300		Yes	Yes	Yes
45N/2W-1P1		Deloe Mills	1953	Irr	4265.4	16	140		Yes	Yes	Yes
46N/1W-2F1	3.5 miles northeast of Macdoel	R. Cheyne	1952	Irr	4241.6	18	300		Yes	Yes	Yes
46N/1W-17G1	On west side of Highway at Macdoel.	Wm. Osborne									Yes
46N/2W-25R2	2.5 miles southwest of Macdoel.	Butte Valley Irrigation Dist.	1950	Irr	4256.2	18	116		Yes		Yes
47N/1W-23H1	0.75 mile east of Southern Pacific Hay Siding.	Elvena Harrison	1949	Irr	4236.1	16	210			Yes	Yes
47N/1W-34Q1	4.0 miles northeast of Macdoel.	Butte Valley Farms	1953	Irr	4237.2	18	358		Yes	Yes	Yes
MDB&M		SHASTA VALLEY (1-4)									
43N/5W-2C1		Big Springs Irr. Dist.		Irr		16	100			Yes	Yes
43N/6W-21R1	2.0 miles northwest of Gazelle.	Dougherty & Son	1953	Irr		16	212			Yes	Yes
44N/4W-6M1		J. C. Martin	1952	Irr		16	110			Yes	Yes
44N/5W-32F1	4.0 miles east of Montague.	S. D. Nelson	1952	Irr Dom			75			Yes	Yes
44N/5W-34H1		H. Silva	3-10-52	Irr	2637.0	16	96		Yes	Yes	Yes
45N/6W-19E1	2.0 miles east of Yreka.	G. Weldon	1944	Dom	2540.0	12	425		No	Yes	Yes
MDB&M		SCOTT RIVER VALLEY (1-5)									
42N/9W-2G1	0.28 mile north of Cory Road extension, 0.37 mile west of East Side Road.	C. W. Black	1948	Irr	2750.0	16	76		Yes	Yes	Yes
42N/9W-10Q1	Etna, California.	C. R. McConnell		Irr							Yes
43N/9W-24F2	2.5 miles south of Ft. Jones on West side of East Side Road.	L. L. Lukes	2-28-53	Irr		16	103		Yes	Yes	Yes
44N/9W-34R1	Fort Jones.	O. E. Heinke	1951	Dom Stk		8	120				Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
HB&M		MAD RIVER VALLEY (1-8)									
5N/1E-8J1	At drying kiln.	Lane Portland Lumber Co.	1952	Ind.	5	8	210				Yes
6N/1W-1H1	1 mile west of Washington School, McKinleyville.	Ace Bulb Farm		Dom. Irr.		16	31				Yes
6N/1W-1P1	6 miles northwest of Arcata, 1000 feet northwest of farmhouse.	J. M. Vieira	1947	Ind.	10	12	16.5				Yes
6N/1E-7M1	5 miles northwest of Arcata, 500 feet northwest of house.	Frank Coleman	1948	Irr. Dom.	11	10	20				Yes
6N/1E-18J1	0.65 mile west and 0.45 mile north of Janes School.	Chester Hunt	1946	Irr.		16	42				Yes
6N/1E-32F1	Southwest part of Arcata at Arcata Plywood Plant.	Arcata Plywood	1951	Ind.	3	12	640				Yes
HB&M		EEL RIVER VALLEY (1-10)									
2N/1W-4D1	Near Pleasant Point School, 2 miles west of Fortuna.	Alex Capaul	1948	Irr.		14	48			Yes	Yes
2N/1W-7A1	2 miles east of Ferndale on Waddington Road.	Harold Wilson	1948 Mar.	Irr.		12	50			Yes	Yes
2N/1W-12D1	0.5 mile northwest of Rohnerville in ravine southwest of house.	Albert Johnson	1952	Irr. Dom	70		114		Yes		Yes
2N/1W-17G1	0.5 mile south of Waddington.	Charles Anderson	1930	Irr.	40	12	40		Yes	Yes	Yes
3N/1W-18D2	3/4 mile worthwest of Loleta, east end of machine storage building.	Chris Peterson	1900	Irr. Dom.		8	75				Yes
3N/1W-29C1	3 miles west of Fernbridge southwest of Highway 101.	Chester Goble	1956	Irr.		12	125			Yes	Yes
3N/1W-30N1	1 mile northwest of Grant Union School.	Ray Tedson	1946	Irr.	19	14	48				Yes
3N/2W-13J1	1 mile south of Loleta.	E. B. Tanferani	1947	Irr.	10	14	38		Yes	Yes	Yes
3N/2W-27G1	2.5 miles northwest of Ferndale, 0.5 mile west of Island School.	R. M. Christiansen	1948	Irr.	9	14	45				Yes
3N/2W-32Q1	3/8 mile northwest of Ranch barns near green hunting shack.	Russ Connick Co.	1950	Irr.	5	12	268				Yes
3N/2W-35M1	2 miles northeast of Ferndale.	P. C. Lorenzen	1947	Irr.	13	14	42		Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		UKIAH VALLEY (1-15)									
14N/12W-5K1	0.8 mile north of Highway 101 and 400 feet south of Ukiah-Boonville Road.	Gilley		Dom.		6	94		No	Yes	Yes
14N/12W-11N1	3 miles south of Talmadge on River Road.	Robert C. Kercher		Dom.			30		No	Yes	Yes
14N/12W-26K1	7.5 miles south of Ukiah; 0.2 mile west of Highway 101.	Marcus Mehtonen		Dom.		8			No	Yes	Yes
15N/12W-8D1	1 mile north of Ukiah on Highway 101 and 0.15 mile west of Orrs Spring Road.	Mayfield		Dom.		6	165		No	Yes	Yes
15N/12W-21H1	Talmadge, California	Regina Water Company		Mun.						No	Yes
15N/12W-35D1	50 feet west of River Road and 0.8 mile south of Talmadge Post Office.	D. Brogri Ranch		Dom. Irr.		12	60			Yes	Yes
16N/12W-5D1	3 miles north of Calpella; on west side of Russian River.	Frank Brown	1948	Dom.		6h	25			Yes	Yes
16N/12W-9Q1	0.15 mile north of intersection of East Road and Calpella Road and 750 feet east of East Road.	Pacific Gas and Electric Company	1951	Ind.		8	64		Yes	Yes	Yes
16N/13W-1J1	3 miles northwest of Calpella on Highway 101.	Norman Reece	1900	Dom.		48	35			No	Yes
17N/12W-18A1	7 miles north of Calpella on Redwood Valley Road.	J. Nelson	1953	Dom.		8	57			Yes	Yes
17N/12W-28M1	4 miles north of Calpella on Redwood Valley Road.	Harry Mathews	1920	Dom.		48	32			Yes	Yes
MDB&M		SANEL VALLEY (1-16)									
12N/11W-2F1	At Pieta on west side of Highway 101.	A. De Marcantonio		Dom.		10	72			Yes	Yes
13N/11W-7D1	3.0 miles north of Hopland; 100 feet east of Highway 101.	E. F. Hawn		Irr.			41			Yes	Yes
13N/11W-18B1	1.25 miles north of Hopland and 0.38 mile east of Highway 101.	A. Damiano		Irr.		12	35			Yes	Yes
13N/11W-18D1	1.5 miles north of Hopland; 100 feet west of Highway 101.	J. H. Pomroy Co.		Irr.		12	60			Yes	Yes
13N/11W-19N1	On Boonville Road; just off Highway 101 in Hopland.	Hopland Public Utility District		Mun.						Yes	Yes
13N/11W-30H1	1.0 mile south of Hopland on East River Road.	Grace Ranch		Dom. Irr. Stk.							

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		ALEXANDER VALLEY (1-17)									
9N/8W-7Q1	3.0 miles southeast of Jimtown. 0.10 mile west of Ranch Headquarters in pasture.	Redwood Hereford Ranch		Irr Dom			490			Yes	Yes
9N/9W-1P1	1.2 miles south of Jimtown; 0.75 mile west of Highway 128 at end of lane in orchard near Russian River.	Henry Dick	1945	Irr		12	90			Yes	Yes
9N/9W-4H1	0.5 mile northeast of Lytton School; on south side of road 150 feet northeast of house.	C. E. Adams		Irr Dom		6	320			No	Yes
10N/9W-18R1	0.5 mile northeset of Geyserville and 300 feet east of Highway 128	H. B. Remmel		Irr		48	14			Yes	Yes
10N/9W-26L1	1.5 miles northwest of Jimtown; 0.75 mile west of Redwinery Road.	Wm. D. Dana	1955	Irr		12	320		Yes	Yes	Yes
10N/9W-32R1	1.0 mile north of Lytton on Highway 101.	Springfield Mill Co.		Ind			245			No	Yes
11N/10W-28N1	0.75 mile northeast of Asti and 0.23 mile east of Highway 101.	Italian Swiss Colony		Irr		60	19				Yes
11N/10W-33A1	0.25 mile east of winery at Asti.	Italian Swiss Colony		Ind Dom		24	20				Yes
11N/10W-33G1	300 feet north of Asti Store	C. Pellegrini		Dom			18			Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SANTA ROSA VALLEY (1-18)									
5N/9W-3F1	1 mile southeast of Bloomfield.	Roland Mattri		Irr		8	800				Yes
6N/7W-17E1	Junction of Petaluma Hill and Crane Canyon Roads.	George Crane	Feb. 1950	Irr	225	8 & 6	650		Yes		Yes
6N/7W-18R1	3/8 mile east of junction of Petaluma Hill and Crane Canyon Roads.	John Wilson	Sept. 1939	Irr	160	8	250				Yes
6N/7W-30D1		Tex Carley		Irr		16					Yes
6N/8W-3B1	7/8 mile west of Highway 101 on Wilder Road off Belleview Road about 0.2 mile.	G. Mallory		Dom	110		60		Yes		Yes
6N/8W-35A2	Just off Highway 101 in Cotati.	Cotati Public Utility Dist.	Sept.1946	Mun	110	12	660				Yes
6N/9W-2G1		City of Sebastopol Water Dept.		Mun			552				Yes
7N/6W-29P1	In town of Kenwood.	Kenwood Fire Dept.	1948	Dom Mun	415	10	112		Yes		Yes
7N/7W-15G1	On State Highway 12 about 3 miles east of Santa Rosa.	Mrs. Meed Clark	April 1939	Irr Dom	375		397				Yes
7N/7W-29D1	2 miles northeast of Santa Rosa in Bennett Valley.	Earl Dethards	May 1947	Irr Dom	240	9	588			Yes	Yes
7N/8W-3L1	3/8 mile northwest of intersection of Mendocino Avenue and Highway 101 on south side of Highway.	W. E. Samuelson	5-8-46	Dom	150	8	150		Yes		Yes
7N/8W-5G1	1 mile east of Fulton on north side of Fulton Road.	C. Bordessa	1943	Dom	140	8	110		Yes		Yes
7N/8W-18Q1	1 mile south of village store on Guerneville Road.	Harry Rasmussen	April 1947	Irr	80	12	811				Yes
7N/8W-31C1	1.25 mile northeast of Sebastopol just off Sebastopol-Santa Rosa Highway.	C. Dotti	1951	Irr		12	780				Yes
7N/8W-33M1	1/8 mile east of end of Yuba Drive at Naval Air Station fence.	A. Marks		Irr Dom	85		452		Yes	Yes	Yes
7N/9W-9F1	1/2 mile south of Vine Hill School on Vine Hill road.	C. W. Gilbert	Dec.1938	Irr	280	6	226				Yes
7N/9W-29R1		Al Helwig		Irr Dom			512				Yes
7N/9W-36M1	3/8 mile north of Sebastopol at Maat Co. Plant	Sebastopol Meat Co.	Sept. 1937	Ind Irr	70	8	88		Yes		Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SANTA ROSA VALLEY(1-18) (Cont.)									
8N/8W-20Q1	In field south of Faught Home, lowermost of two wells.	H. A. Faught					312				Yes
9N/10W-1C1	3.5 miles northwest of Healdsburg on Dry Creek Road.	Frei Brothers Winery		Dom. Ind.			209				Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SANTA CLARA VALLEY, EAST BAY AREA (2-9a)									
2S/3W-36F1	0.05 mile northwest of 135th. Avenue on east 14th. Street.	Trailer Haven Auto Court	7-30-56	Dom		16 & 12	290		Yes		Yes
2S/3W-36K1	13909 East 14th Street, San Leandro.	Shimoda Nursery	4-14-51	Irr		12	432		Yes	Yes	Yes
2S/3W-36M1	0.2 mile south of intersection of Washington Avenue and Second Avenue.	John Perata	7-14-53	Dom		10	104		Yes		Yes
2S/3W-36Q1	0.25 mile northeast of Washington Avenue on 143rd. Avenue; on entrance road to well; most northwesterly of three wells.	Nakashima Nursery	12-10-51	Irr		16 & 12	601		Yes		Yes
3S/2W-7G1	San Lorenzo High School on Lewelling Blvd. 0.4 mile east of Hesperian Blvd., 500 ft. east of Southern Pacific Railroad tracks.	Hayward Union High School Dist.		Dom Irr		14	616		Yes	Yes	Yes
3S/2W-21F1	Hayward; Southeast corner of Winton Road and Southern Pacific Railroad tracks, 50 ft. south of Winton Road, 150 ft. east of the tracks.	J. Harr	3-17-51	Ind		10	306		Yes	Yes	Yes
3S/2W-32R1	1.0 mile south of Mt. Eden, 0.2 mile south of Arf Road; 0.5 mile west of Hesperian Blvd.	E. R. Lamareaux	8-26-57	Dom		6	50		Yes	Yes	Yes
3S/2W-34J1	2.0 mile south of Hayward; 0.2 mile east of Russ Road; 0.4 mile south of Tennyson Road on northwest corner of Folsom Street and unnamed dirt road.	H. Miller	7-31-56	Dom		6	40		Yes	Yes	Yes
3S/2W-36K1	0.8 mile up Garin Avenue from Castro Blvd., 100 ft. south of Garin in pasture.	H. C. Cummings	8-24-54	Dom Stk		6	114		Yes	Yes	Yes
3S/2W-36K2	1.0 mile north of Dacoto; second house to south off Garin Avenue in 1700 Block, 0.8 mile up Garin Avenue from Castro Blvd.	G. W. Black	10-18-54	Dom		6	92		Yes	Yes	Yes
3S/3W-1G3	0.15 mile west of Washington Avenue on Halcyon Avenue to dirtroad; 0.05 mile south of Halcyon on east side of road.	Avansino-Mortensen Co.	3-28-51	Irr		12	701		Yes	Yes	Yes
3S/3W-3L1	84 ft. north of west 137th. Avenue; 60 ft. east of Aurora Drive on north side of home.	W. R. Sharp	11-2-50	Dom Irr		6	55		Yes		Yes
4S/1W-21M1	0.37 mile north of Fremont Aveoue at north end of Shinn Road.	H. J. Kaiser		Ind	69		165		No	Yes	Yes
4S/1W-29M1	75 feet southeast of Central Avenue and two blocks southwest of State Highway 17.	Joseph Thomas		Irr Dom			116		No	Yes	Yes
4S/1W-30K3	100 feet northwest of Baine Avenue and 0.40 mile southwest of State Highway 17.	George Silva		Irr			265		Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SANTA CLARA VALLEY, SOUTH BAY AREA(2-9b)									
5S/3W-35G1	North of intersection of Palo Alto Avenue and Hale Street.	City of Palo Alto		Mun	50		303		Yes	Yes	Yes
6S/1E-4M1	Northwest corner of intersection of Calaveras Road and Evans Road.	J. C. Rose		Dom	126	12-275' 10-475'	575		No	No	Yes
6S/1E-30M1	100 feet north of Brokaw Road and 0.64 mile east of Bayshore Highway.	M. Machado		Irr Dom	47	10			No	Yes	Yes
6S/1W-14L4	50 feet north of San Jose-Alviso Road and 0.45 mile northwest of State Lane.	D. Burrell		Irr Dom			700		No	No	Yes
6S/1W-16A1	Southwest side of Santa Clara-Alviso Road and 925 feet southeast of intersection Mountain View Road and Santa Clara-Alviso Road.	R. T. Collier Corp.	October 1945	Ind		12	551		Yes	No	Yes
6S/1W-19B1	250 feet west of Fair Oaks Avenue and 0.25 mile south of Mountain View-Alviso Road.	Fred Lara		Dom Irr			485		Yes	No	Yes
6S/1W-26D1	0.3 mile east of Santa Clara-Alviso Road and 0.3 mile south of Montague Road.	T. A. Wilcox Bros.	1930	Irr	29	12	640		Yes	Yes	Yes
6S/1W-33C1	0.8 mile east of Lawrence Road and 0.2 mile south of Kifer Road.	Marionelli Bros.		Dom Irr			229		No	No	Yes
6S/2W-9H1	Northwest corner of intersection of Stierlin Road and Silver Road.	F. Ormsby	5-15-48	Dom	6	6	200		Yes	Yes	Yes
6S/2W-14R1	Southeast corner of Moffett Field and 50 feet north of Bayshore Highway.	M. H. Holthouse	1950	Irr Dom	41	12	868		Yes	Yes	Yes
6S/2W-16Q1	0.25 mile west of Stierlin Avenue and 0.4 mile north of Alma Street.	Ormande		Irr Dom		12	500		No	No	Yes
6S/2W-17M1	0.1 mile northwest of San Antonio Road on northeast side of Alma Street.	Antoku		Irr Dom			376		Yes	No	Yes
6S/2W-28R1	West side of Grant Road and 0.5 mile south of U. S. Highway 101.	H. Mantelli		Irr			320		Yes	No	Yes
6S/2W-34M1	North side of Levin Avenue and 0.11 mile east of Grant Road	H. Mantelli	1926	Irr Dom		12	660		No	Yes	Yes
6S/2W-36H2	50 feet north of Reed Avenue and 0.55 mile east of U. S. Highway 101.	O. P. Gluhaich		Irr	112	12	470		Yes	Yes	Yes
6S/3W-2D1	On east corner of intersection of Hawthorne Avenue and Southern Pacific Railroad.	City of Palo Alto		Mun			367		Yes	Yes	Yes
6S/3W-12C1	Northeast corner of intersection of College Avenue and Park Blvd. Back of Fire House Number 2.	City of Palo Alto		Mun	32		525		Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		LIVERMORE VALLEY (2-10)									
2S/2E-27C1	0.3 mile north of Raymond Road and 0.05 mile east of Dagnino Road.	Peter Dagnino		Stk Dom							Yes
2S/2E-35G1	75 feet east of Vasco Road and 50 feet south of Scenic Avenue.	John H. Hanna		Dom	528.3	6			Yes	No	Yes
3S/1E-3Q1	1.5 mile east of Santa Rita Road and 0.25 mile south of Highway 50 at end of private road.	Alameda County	4-6-26	Dom Irr			350				Yes
3S/1E-7Q1	1.4 mile south of Highway 50 on north side of Arroyo Las Positas.	Hugh Walker		Irr	321.38		240			Yes	Yes
3S/1E-8H2	0.85 mile south of U. S. Highway 50 and 100 feet west of Santa Rita Road, 100 feet south of Arroyo Las Positas.	U. S. Air Force	1942	Dom Irr			205			No	Yes
3S/1E-10Q2	1.6 mile east of Santa Rita Road, at end of Pleasanton Avenue.	Cecil M. Cope		Dom Irr							Yes
3S/1E-11H1	1.2 miles west of Isabel Avenue on Livermore-Pleasanton Road and 1.2 miles north on dirt road.	E. Hagemann	Aug.1949	Dom Irr	372.92		303		Yes	Yes	Yes
3S/1E-13P2	0.75 mile south of Livermore-Pleasanton Road on Isabel Avenue and 0.55 mile west of Isabel Avenue.	California Rock and Gravel Co.	1933	Dom		12	400		Yes	No	Yes
3S/1E-15L1	500' north of Livermore-Pleasanton Road and 200 feet east of Kaiser Road.	H. J. Kaiser	1946	Dom Irr		12	304		Yes		Yes
3S/1E-16H1	0.2 mile northwest of Livermore-Pleasanton Road and 250 feet west of Kaiser plant office at Radum.	H. J. Kaiser	1945	Ind	360.38	18	305		Yes	No	Yes
3S/1E-19A5	0.8 mile west of Western Pacific Railroad crossing on Bernal Avenue and 0.2 mile north of Bernal Avenue.	San Francisco Water Department		Mun Irr		12	220		Yes	No	Yes
3S/2E-2R1	0.2 mile east of Taylor Avenue on north side of Western Pacific Railroad tracks.	Charles Nissen		Irr			437			Yes	Yes
3S/2E-3Q2	1.5 mile east of Livermore, 0.1 mile southwest of Livermore Road.	Graham Niesen	Aug.1956	Dom		6	107			Yes	Yes
3S/2E-3R2	0.4 mile southwest of junction of Highway 50 and Livermore Blvd. on Livermore Blvd., 0.35 mile south, 0.2 mile east, 0.15 mile north on driveway then dirt road from Livermore Blvd.	Graham Niesen	5-8-52	Irr		12-10	389		Yes	Yes	Yes
3S/2E-4H2	0.75 mile west of Livermore turnoff on U. S. Highway 50 and 100 feet north of U. S. Highway 50 and 0.15 mile east.	California Water Service Co.		Mun			520			No	Yes
3S/2E-7K1	0.7 mile west of Rincon Avenue and 250 feet north of Olivina Avenue.	H. L. Hagemann	Oct.1938	Irr		12	230		Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		LIVERMORE VALLEY (2-10) (Cont.)									
3S/2E-8H1	30 feet south of Elm Street and 30 feet west of Livermore Avenue in Livermore.	California Water Service Co.	1929	Mun	473.5	12	625		Yes	Yes	Yes
3S/2E-8N2	0.2 mile west of Rincon Avenue on Olivina Avenue.	H. Sweet		Dom Irr		8	200			No	Yes
3S/2E-10E1	0.5 mile north of East Avenue and 75 feet west of Hilcrest Avenue.	J. H. Barber	Aug. 1948	Dom Irr		10	201		Yes	Yes	Yes
3S/2E-10F1	0.5 mile west of Las Positas Road on Livermore Blvd. thence south across Western Pacific Railroad tracks to plant and east to well.	Coast Manufacturing Co.	12-23-24	Dom Ind		16-8	740		Yes	Yes	Yes
3S/2E-10H1	0.1 mile east of Buena Vista Avenue on East Avenue 0.5 mile north of East Avenue on dirt road.	Amling DeVore Nursery	1947	Irr Dom	569.1	10	376		Yes		Yes
3S/2E-10P2	0.25 mile west of Almond Avenue on East Avenue.	Seckler		Dom Irr					No		Yes
3S/2E-11K1	0.2 mile west of Taylor Avenue and 0.35 mile north of East Avenue.	Twin Nurseries	Jan. 1942	Irr	584.9	12	621		Yes	Yes	Yes
3S/2E-11K2	0.3 mile north of East Avenue on Taylor Avenue, 100 feet west of Taylor Avenue.	R. S. Vanderbur		Dom		4	85				Yes
3S/2E-14B1	0.2 mile west of Las Positas Avenue on East Avenue.	Bargmann		Irr Dom			300				Yes
3S/2E-15B1	0.1 mile south of East Avenue on Almond Avenue.	Harry Leeds	6-25-49	Irr Dom		12-10	413		Yes		Yes
3S/2E-15C1	At southeast corner of East Avenue and Madison Avenue.	California Water Service Co.	4-17-57	Mun		30-16	514		Yes		Yes
3S/2E-15J1	0.35 mile north of Tesla Avenue on Buena Vista Avenue; 150 feet east of Buena Vista Avenue.	P. B. Archibald		Dom		6	120			No	Yes
3S/2E-15K1	0.5 mile south of East Avenue on Almond; 0.03 mile west of Almond.	Concannon Winery	4-10-46	Irr			634		Yes	Yes	Yes
3S/2E-15Q1	0.3 mile west of Buena Vista Avenue on Tesla Avenue.	Concannon Winery		Dom Ind			345				Yes
3S/2E-16A1	0.7 mile east of South Livermore Avenue on East Avenue.	St. Michaels Cemetery		Irr			110			No	Yes
3S/2E-16E1	0.1 mile south of College Avenue; 50 feet east of "L" Street.	Livermore Saniterium		Irr Dom			394			Yes	Yes
3S/2E-16J1	0.2 mile south of College Avenue on Tesla Road.	Wente Bros. Winery	7-7-41	Ind Dom Irr		10-8	501		Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		LIVERMORE VALLEY (2-10) (Cont.)									
3S/2E-17B1	At west corner of intersection of Fourth Street and College Avenue in Livermore.	California Water Service Co.	1948	Mun	493	14-620' 12-760'	760		Yes	No	Yes
3S/2E-17N1	0.45 mile south of Mocho Street and 0.4 mile west of Vallecitos on south side of private road.	W. Wagoner	1929	Irr	458.38	12	401		Yes	Yes	Yes
3S/2E-18B1	0.75 mile west of Livermore 2.2 mile south of Olivina Avenue.	Lambert		Dom		6	290			No	Yes
3S/2E-20K1	0.4 mile west of Arroyo Road and 0.3 mile south of "C" Street.	F. A. Wagner	Sept. 1949	Dom Irr		10	300		Yes	Yes	Yes
3S/2E-22E1	0.75 mile south of Tesla Road and 20 feet west of Marina Avenue.	A. A. Kirkman	Feb. 1948	Irr	571.9	10	445			Yes	Yes
3S/2E-22E2	0.75 mile south of Tesla Road, 100 feet west of Marine Avenue.	A. A. Kirkman		Dom		6	105			No	Yes
3S/2E-23C 2	0.4 mile east of intersection of Buena Vista Avenue and Tesla Road, 500 feet south of Tesla Road.	Dalmazzo		Dom Irr		10	110		No	Yes	Yes
3S/2E-23D1	0.1 mile east of Mines Road on Tesla Road.	R. E. Stambaugh		Dom		6	25		No	Yes	Yes
3S/2E-29D1	0.5 mile south of Alden Lane and 100 feet west of Vallecitos Road.	B. G. Wood	Oct. 1948	Irr	466.38	12	500			Yes	Yes
3S/2E-29F1	0.1 mile south of Vallecitos Road on Wetmore Road and 0.1 east of Wetmore Road.	Helen Slattery	8-11-49	Dom Irr		12	310		Yes		Yes
3S/3E-19C1	0.4 mile east of Greenville Road and 0.15 mile south of Tesla Road.	Joe Amaral		Irr	740.8	10	300			Yes	Yes
3S/1W-1G1	300 feet north of U. S. Highway 50 and 0.9 mile east of Dublin. Well at windmill.	E. B. & J. Nevin		Stock						Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		PAJARO VALLEY (3-2)									
12S/1E-10J1	0.1 mile east of Pacific Ocean, 0.2 mile north of Sunset Beach Road.	Rinaldi Bros.		Dom Irr	90.0				No	Yes	Yes
12S/1E-14J1	0.4 mile north of Dairy Road; 0.5 mile west of San Andres Road.	Roach		Irr					No	No	Yes
12S/1E-23R1	West end of Beach Road at Palm Beach Camp.	E. L. Padden		Dom			300		No	No	Yes
12S/1E-24G1	25 feet northwest of Beach Road; 0.7 mile southwest of San Andres Road.	R. Trafton		Dom Irr	9.4	12	200		No	Yes	Yes
12S/1E-24J2	0.48 mile southeast of Beach Road; 1.0 mile south of intersection of San Andres and Beach Roads.	Caeson		Irr	12.4				No	Yes	Yes
12S/1E-25B2	0.8 mile southeast of Beach Road at intersection of Beach Road and Sunset Beach Road.	C. McCollum		Irr	7.0		600		Yes	Yes	Yes
12S/1E-25C1	0.6 mile southeast of Beach Road at intersection of Sunset Beach and Beach Roads.	T. C. Morley		Irr		12	600		Yes	No	Yes
12S/2E-7K1	1.5 mile northeast of San Andres Road and 0.7 mile northwest of Beach Road and 0.25 mile southwest of Lee Road.	A. L. Waugaman	April 1947	Irr	20	12	263		Yes	No	Yes
12S/2E-8P1	Northwest side of Beach Road, 0.2 mile northeast of Lee Road.	Muramoto		Dom Irr	16.5		160		Yes	Yes	Yes
12S/2E-10J2	On west side of Storm Road, 0.28 mile south of San Juan Road.	Barba		Irr	32.6	14	186		Yes	Yes	Yes
12S/2E-12L1	Southside of San Juan Road, 0.6 mile west of San Miguel Canyon Road.	O. O. Eaton		Irr	54.1				No	Yes	Yes
12S/2E-18J1	50 feet north of Pajaro River; 0.69 mile northeast of Thurwacther Road.	F. Kellog		Dom Irr	18.0		150		Yes	Yes	Yes
12S/2E-19M1	0.7 mile southwest of Thurwacther Road; 100 feet south of Pajaro River.	M. Williameon		Irr Dom	12.3	14	225		Yes	Yes	Yes
12S-2E-20N1	0.35 mile west of Highway 1, 1.1 mile north of Trafton Road near Labor Camp.	T. E. Trafton		Dom Irr	169.5	12	300		Yes	Yes	Yes
12S/2E-29E1	0.5 mile west of Highway 1, 0.65 mile north of Jensen Road.	M. C. Miller		Irr	159.5	12	310		Yes	Yes	Yes
12S/2E-30F3	750 feet north of Bluff Road; 100 feet east of Trafton.	V. & E. Cray		Irr	106.7		400		No	Yes	Yes
12S/2E-30L1	0.15 mile east of Trafton Road; 75 feet south of Bluff Road.	J. Fenaglio	1946	Irr	71.0	12	180		Yes	Yes	Yes
12S/2E-31A1	0.18 mile south of intersection of Bluff and Jensen Roads.	A. & E. Tottoni		Irr			250		Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		PAJARO VALLEY (3-2) (Cont.)									
12S/2E-31C1	0.12 mile south of Janeen Road; 0.52 mile southwest of Bluff Road.	J. F. Morre		Irr	88.8	12	170		No	Yes	Yes
12S/2E-31K1	1.0 mile west of Highway 1 on Springfield Road.	Tornavaca		Irr	30.0	12	319		Yes	Yes	Yes
12S/2E-32N1	0.3 mile west of Highway 1; 0.2 mile north of Beach Road.	G. Hurley		Irr	125.0	14	372		Yes	Yes	Yes
12S/3E-7B1	0.1 mile west of Murphy Road; 0.24 mile south of Riverside Road.	L. Danovac		Irr	57.9	14	158		No	Yes	Yes
12S/3E-9Q1	0.1 mile west of Aromas Road, 0.4 mile south of Riverside Road.	Tanimura Bros.		Irr	102.0	12	98		Yes	Yes	Yes
13S/2E-6E3	1.5 mile west of Highway 1, 0.6 mile south of McClusky Slough.	J. Strucki		Irr	31.4	12	192		Yes	Yes	Yes
13S/2E-7B2	0.25 mile west of State Highway 1 and 0.70 mile south of McClusky Slough.	F. Cappuro	Jan. 1946	Irr	12.8	12	228		Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SALINAS VALLEY (3-4)									
13S/2E-7R1	0.75 mile north of Moss Landing and 500 feet northeast of highway.	Monterey Bay Salt Co.		Dom Ind			740			No	Yes
13S/2E-16E1	1.0 mile northeast of Permanente Plant and 0.3 mile north of Dolan Road.	M. Minhoto		Irr	20.0	12	174		Yes	Yes	Yes
13S/2E-17H1	1.0 mile northeast of Permanente Plant, 0.3 mile north of Dolan Road.	Delfino & Calcagno		Irr	17.0	12				Yee	Yes
13S/2E-19R1	1.0 mile south of Moss Landing, just west of house.	T. Leonardini	March 1947	Dom Irr	13.0	16 & 10	508		Yes	Yes	Yes
13S/2E-20P1	1.1 miles northwest of Castroville and 660 feet east of Castroville-Moss Landing Highway.	Permanente Cement Co	April 1947	Ind			813		No	No	Yes
13S/2E-20R2	0.75 mile east of Moss Landing Road 0.4 mile east of Permanente #2 operating pump, thence 100 feet north.	Jennie Tate									Yes
13S/2E-30L1	On Shore ranch between building and Tembladero Slough crossing.	J. J. King		Irr							Yes
13S/2E-31D2	West of buildings on Warnock Shore Ranch.	J. J. King	1945	Irr		16	559		Yes		Yes
13S/2E-31K2	Southwest corner of junction of Molera and Mulligan Hill Road.	Molera Estate	1944	Dom		12	211				Yes
13S/2E-31M2	0.5 mile north of Mulligan Hill and 0.3 mile northwest of Mulligan Hill Road.	E. Bellone	Oct. 1952	Irr	8.3				Yes	Yes	Yee
13S/2E-31N2	0.75 mile southwest on Mulligan Hill Road from junction of Molera Road.	E. Bellone, et al.	1947	Irr		16	576		Yes	Yes	Yes
13S/2E-32C1	0.5 mile west of Castroville, and northwest of Molera Road.	O. P. Overhouse	Oct. 1949	Irr	8.8	16 & 10	562		Yee	Yes	Yes
13S/2E-32J1	0.5 mile west of Castroville.	Cooper Estate	1939	Irr		16	193		Yes		Yes
13S/2E-32N1	1.2 mile north of Nashua on west side of Molera Road.	Molera Estate		Irr		16 & 10	602		Yes		Yee
13S/2E-33E1	0.5 mile west of Castroville and 0.3 mile north of Fort Ord Road.	Dorothy V. Orcutt, et al.		Irr		12	180		No		Yes
13S/2E-33R1	600 feet west of Salinas-Castroville Highway and 0.25 mile south of Fort Ord Highway.	Caterina Rissotti		Irr	24.8	12					Yes
14S/2E-5R2	0.5 mile south of Nashua, 100 feet west of Molera Road.	Molera Estate		Irr	15.0	12	191		Yes	Yes	Yes
14S/2E-6Q1	0.25 mile east of Salinas River, 0.5 mile north of Fort Ord Highway.	Mrs. Lottie Martin	June 1948	Irr	13.0	16 & 10	553		Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SALINAS VALLEY(?-4) (Cont.)									
14S/2E-6R2	0.25 mile east of Salinas River and 0.25 mile north of Fort Ord Highway.	E. Struve et al.	Feb. 1948	Irr		16 & 10	604		Yes		Yes
14S/2E-8M2	0.4 mile east of Neponset Station.	Jacob Jefferson		Irr	14.5	16				Yes	Yes
14S/2E-9K1	0.15 mile southwest of Blanco-Nashua Road and 1.3 miles southeast of Monterey Branch Southern Pacific Railroad.	Dorothy V. Orcutt, et al		Irr	18.9	12				Yes	Yes
14S/2E-11D1	0.75 mile east of Salinas-Castroville Highway and 1.0 mile south of Espinoza Road.	J. P. Rodgers	1943	Dom Irr		12	159		Yes	Yes	Yes
14S/2E-12Q1	1.5 mile east of Salinas-Castroville Highway; 0.8 mile west of Graves-Gularte Road.	E. C. Eaton		Irr	62.0	16	619		Yes	Yes	Yes
14S/2E-14N1	0.5 mile west of junction of Salinas-Castroville Highway and Cooper Road.	L. A. Wilder		Dom		10	304		Yes	Yes	Yes
14S/2E-15L1	Just west of Nashua Road and 0.5 mile northwest of its junction with Cooper Road.	Monterey County Bank		Irr	23.0	12	175.5		Yes	Yes	Yes
14S/2E-18D1	0.75 mile southwest of Neponset Station.	J. G. Armstrong Co.		Irr	6.5	12	135		Yes	Yes	Yes
14S/2E-23J1	0.4 mile west of Castroville-Salinas Highway and 0.6 mile west of Graves school.	A. H. Bordges		Irr	38.0	12	200			Yes	Yes
14S/2E-24E1	Southeast corner of junction of San Juan Road and Salinas-Castroville Highway.	M. T. DeSerpa	May 1951	Dom Irr		12	467		Yes	No	Yes
14S/2E-25B1		M. T. DeSerpa		Irr							Yes
14S/2E-26A1				Irr Dom							Yes
14S/3E-30B1											Yes
14S/3E-30E1	0.3 mile west of Calvary Cemetery.	Annie Lanini		Irr		12				Yes	Yes
14S/3E-30F1											Yes
15S/2E-1A1	On Davis Road, 0.5 mile southwest of junction with Graves-Blanco Road.	James P. Dolan		Irr	34.4	12				Yes	Yes
15S/2E-2Q1	West of Salinas River and 1.0 mile northwest of Davis Road Crossing.	Lee Jacks		Irr		12					Yes
15S/3E-4L1	0.5 mile southwest of junction at Romie Lane and Highway 101 south.	David P. McFadden, et al.		Irr	57.2	12				Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SALINAS VALLEY (3-4) (Cont.)									
15S/3E-5Q4	2200 feet south of intersection of Salinas-Monterey Highway and Nissen Road, thence 400 feet east.			Irr			252		Yes	Yes	Yes
15S/3E-7D1	0.5 mile north on Foster Road from Davis Road junction.	F. Giottinini		Dom Irr	40.0	12	176		Yes		Yes
15S/3E-8N1	At junction of Monterey State Highway and Foster Road.	Laura G. Foster		Irr	47.4	12				Yes	Yes
15S/3E-16M1	0.4 mile west of intersection of Harkins Lane and Spreckels Road in Spreckels, 100 feet north of Spreckels Road.	Spreckels Sugar Co.		Irr	58	12				Yes	Yes
15S/3E-17P1	300 feet west of Salinas River on River Road. 0.75 mile south of Montersy State Highway.	J. Violini		Irr	52	16	503			Yes	Yes
16S/4E-24A1	0.1 mile southwest of Highway 101 opposite intersection with Old Stage Road.	K. R. Nutting		Irr	114	12					Yes
16S/4E-25K1	Near Gonzalee	J. C. Twisselman									Yes
17S/6E-27K1	Near Soledad			Irr							Yes
17S/6E-35F1	2.2 miles southeast along Railroad from Highway 101 crossing at Soledad, just south of Southern Pacific Railroad.	Mart Baker	1940	Irr	227	16	242		Yes	Yes	Yes
18S/6E-1E1	2.3 miles upstream from Soledad Bridge and 0.8 mile south of Salinas River.	L. M. and V. Jacks		Irr		12					Yes
18S/6E-2N1	0.5 mile northeast of Highway 101; 1.75 miles southeast of intersection of Highway 101 and Arroyo Seco Road.	L. Jacke		Irr	210	12				Yes	Yes
MDB&M		CARMEL VALLEY (3-7)									
16S/1E-18F1	0.3 mile east of State Highway 1 and 0.25 mile south of Carmel Valley Road.	E. and W. Hatton		Irr		12	135			Yes	Yes
16S/1W-13R1	0.4 mile east of Highway 1 on south bank of Carmel River.	B. Odello				12	108			No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		SANTA MARIA RIVER VALLEY (3-12)									
9N/33W-2A1	0.15 miles west of crossing and 400 feet north of Garey.	J. S. Calderon et al.	1921	Irr	379	12	168	34-48	Yes	Yes	Yes
10N/34W-6A1	1 mile northeast of Bonita School	Griesingner and Signorelli	1924	Irr	152	16	190		Yes	Yes	Yes
10N/34-16R1	40 feet west of Blosser Ave. and 0.87 mile south of West Main	J. J. O'Leary		Irr Dom Stk	204	16	200		Yes	No	Yes
10N/35W-4C1	50 feet west of State highway 1	Union Sugar Co.		Irr	88	16	280		Yes	No	Yes
10N/35W-7F1	2 miles west of Guadalupe; 185 feet north of Guadalupe Road.	M. J. Ellie	1928	Dom Irr	48	12	249	140-145; 200-225	Yes	Yes	Yes
10N/35W-9N2	130 feet south of Highway 166 and 35 feet west of Highway 1.	Union Sugar Co.	1924	Irr	87	16	464		Yes	No	Yes
10N/35W-16M1	4600 feet south of highway 166; 50 feet west of highway 7.	Agnes F. King		Dom Irr Stk	78	12	224		No	No	Yes
10N/35W-21C1	0.5 mile north of Brown Road 50 feet west of highway 1.	Agnes F. King		Irr	93	12			No	No	Yes
11N/35W-18M1	1500 feet north of Oso Flaca Rd. near Lake Windmill.	Union Sugar Co.		Dom Irr	24	6	200		No	No	Yes
11N/35W-27Q1	1.6 mile west of Cuyama School; 1.0 mile east of Highway 1.	Oscar Ferrari		Dom Irr					No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		CUYAMA VALLEY (9-13)									
7N/24W-13C2	370 feet southwest of Highway 399 by windmill.	Apache School Ventura County	1949	Dom	3418	8	165		No	No	Yes
9N/24W-19F1	400 feet west of U. S. Highway 399 at Cuyama Forest Ranger Station.	U. S. Government Forest Service		Dom	2756	10	113	83-113	Yes	Yes	Yes
10N/25W-22E1	2.6 mile east of Cuyama River on State Highway 166; 40 feet north of Highway.	E. A. Mettler	1946	Dom	2368	16-10	659		Yes	No	Yes
10N/26W-9R2	1 mile north of Highway 166.	H. Russel-Cuyama Ranch		Not in Use	2135	14	380	34-54, 97-111, 118-131 156-168, 175-212	Yes		Yes
10N/26W-21K1	2.3 mile west of Cuyama P. O. and 1.1 mile south of Highway 166.	Stanley Germain	6-12-43	Dom Irr	2295	16	993	144-809	Yes	Yes	Yes
10N/27W-11G1	1400 feet north of Highway 166 and 6800 feet east of Highway Maintenance Station.	Walt Smith		Dom Irr	1963	14	378	36-117	Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		OXNARD PLAIN PRESSURE AREA (4-4.11)									
1N/21W-30A1	0.33 mile west of highway 101 along Hueneme Rd. and 200 feet south of Hueneme road.	Ed Murdhart	1931	Irr			591	387-407, 421-434, 498-512, 532-587	No	No	Yes
1N/21W-31A1	1.1 mile south of Hueneme road and 0.38 mile west of U. S. 101 along Hueneme road.	Point Mugu Game Reserve	1-6-51	Irr		12	234	190-230	Yes	No	Yes
1N/21W-31L2	50 feet south of Casper road; 300 feet west of U. S. N. Point Mugu fence.	Ventura County Game Reserve	7-2-52	Ponds		10	434	224-242, 386-426	Yes	No	Yes
1N/22W-3F4	200 feet east of Highway 101 and 100 feet north of Third St.	City of Oxnard	1912	Mun		10	232	141-232	Yes	Yes	Yes
1N/22W-7D1	East side of dairy building near Wooley Rd. ; 0.80 mile west of West Rd. and 1000 feet south of Wooley road.	D. McGrath Estate Co.		Dom Stk						Yes	Yes
1N/22W-8K3	130 feet south of Howe Road; 40 feet west of Patterson road.	J. A. Alvarez Jr.	12-15-45	Irr Dom		16	240	111-228		No	Yes
1N/22W-9Q3	1400 feet south of Howe Rd. extended; 1250 feet east of Ventura road.	Ignatius Friedrich		Irr Dom			154			No	Yes
1N/22W-15B3	130 feet north of Dempsey Rd. and 150 feet west of Ventura railroad.	City of Oxnard		Mun						No	Yes
1N/22W-18E1	0.36 mile south of Oxnard Rd. and 75 feet of Ocean Drive and 50 feet east of La Crescenta Street.	Hollywood Beach Resort		Dom			235	196-210		No	Yes
1N/22W-19B3	80 feet east of Roosevelt Blvd. 20 feet north of Lakeshore	Hollywood by the Sea Mutual Water Co.	2-11-54	Mun		10	482	198-204, 232-240 290-310		No	Yes
1N/22W-20B1	0.5 mile south of Cutting road; 500 feet east of Patterson	U. S. Navy	1914	Dom	14	14	324	268-305	No	Yes	Yes
1N/22W-20E2	15 feet south of Highland Drive; 80 feet west of south end of Panama Drive.	Silver Strand Mutual	3-29-55	Mun	11		1014	940-974	Yes	Yes	Yes
1N/22W-20R1 NCBC #2 8-V-21	Port Hueneme Naval Base 0.5 mile west of Ventura road; 0.34 mile south of Pleasant Valley road.	U. S. Navy		Obs	15	12					Yes
1N/22W-21B2 # 5	0.38 mile east of Ventura road 0.42 mile north of Pleasant Valley road.	City of Port Hueneme		Mun						No	Yes
1N/22W-23C1	0.3 mile southwest on Pleasant Valley road from Etting road; from Etting road; 100 feet south east of Pleasant Valley road in farmyard.	A. L. Varnau	1938	Dom Irr Stk	26		230			Yes	Yes
1N/22W-26A1	20 feet south of Hueneme road; 500 feet west of Casper road.	S. R. Pidduck	1924	Irr Dom		12	236	188-229		No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		OXNARD PLAIN PRESSURE AREA (4-4.01) (Cont.)									
1N/22W-28A2 9-V-71	0.32 mile west of Saviers road and 20 feet south of Hueneme road.	R. E. Lawn	1949	Dom Irr		14			No	No	Yes
1N/22W-28H2	50 feet east of Perkins road; 1750 feet south of Hueneme road.	Kalof Pulp and Paper	7-1-52	Ind Dom		10	175	135-170	Yes	No	Yes
2N/22W-27M2	200 feet west of highway 101A and 0.1 mile south of Vineyard Ave.	Brightview Motel	8-18-47	Dom		12	225	180-210		No	Yes
2N/23W-25Q1	2.9 miles west of Ventura Road 0.15 mile north of Gonzales Rd	Frank McGrath	5-28-47	Dom		10	232	190-220		No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SB&M		WEST COAST BASIN-AREA OF SEA-WATER INTRUSION(4-11.02)									
3S/14W-30H2 721-K	50 feet west of Aviation Blvd.; 50 feet south of Sixth Ave.	City of Manhattan Beach		Mun						No	Yes
3S/14W-31A1 712-A	450 feet south of Gould Lane and 80 feet west of Pier Ave. Hermosa	California Water Service Co.	1902	Mun					No	No	Yes
3S/15W-12G1 1297-E	55 feet west of California Street and 60 feet south of Palm Ave.	City of El Segundo	6-30-39	Mun	112					Yes	Yes
3S/15W-12H3 137-D	250 feet north of Palm Avenue and 600 feet west of Sepulveda Blvd., El Segundo	City of El Segundo	3-21-47	Mun	130				No	Yes	Yes
3S/15W-13R2 1309-E	176 feet west of Sepulveda Blvd. and 400 feet north of	Standard Oil Co. of California	1941	Ind	154	16	480		No	Yes	Yes
4S/14W-8F1 725-F	480 feet west of Henrietta Street 475 feet north of Emerald Street extended	Dominguez Water Co.	Mar 1940	Mun	116	16	518	232-262, 304-330, 350-420, 400-450	Yes	Yes	Yes
		WEST COAST BASIN, TORRANCE AREA(4-11.02)									
4S/13W-6A1 814	150 feet west of Main Street and 180 feet north of Francisco Street, east of Torrance	Ray Beauley		Dom	239	4	82		No	Yes	Yes
4S/13W-6A1 814-A	115 feet west of Main Street and 120 feet north of Francisco Street, east of Torrance	George Branning	Prior to 1934	Dom Stk	245	5	60		No	Yes	Yes
4S/14W-9A1 746	750 feet east of Hawthorne Ave. 950 feet south of Torrance Blvd.	Chanslor-Canfield Midway Oil Co.	10-31-23	Ind	106	12	557			Yes	Yes
4S/14W-35A1 271-A	1650 feet south of Pacific Coast Highway, 18 feet west of Pennsylvania Avenue.	Edw. Sidebotham & Son	1-11-26	Ind		12	585	280-305, 450-475, 482-502		No	Yes
4S/14W-35F2 281-C	0.46 mile south of Pacific Coast Highway and 200 feet west of Marbonne Avenue	Chandlers Palos Verdes Sand and Gravel Co.		Ind		16	695		No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		WEST COAST BASIN-ATHENS AREA(4-11.02)									
3S/13W-29G3 831-	125 feet north of 165th. Street 660 feet east of Avalon Blvd.	Marian Ishida	1-25-28	Dom Irr	61	8	235		Yes		Yes
3S/13W-31F1 813-H	150 feet north of 184th Street 180 feet west of Hoover Street 0.34 mile west of Figueroa Street.	Mrs. Distel	1936	Dom Irr	27	6	159		No	Yes	Yes
3S/14W-24A1 1409-D	700 feet south of Rosencrans Avenue 230 feet west of Vermont Ave.	Jim Scander	1936	Irr	55	12	215		Yes		Yes
3S/14W-24Q2 801-B	250 feet north of 158th Street 215 feet west of Normandie Ave.	Walter H. Belton	1935	Irr	47	6	52		No		Yes
3S/14W-25K4 802-	200 feet east of Normandie Avenue 0.14 mile south of 168th Street.	Wilbur Hornstra	1901	Irr Stk Dom	33	7	180		No	Yes	Yes
3S/14W-27C1 761-	220 feet south of Manhattan Beach Blvd. 780 feet west of Cerise Ave.	L. A. County Park Dept.	7-1-57	Irr	45		448		Yes	No	Yes
3S/14W-35M5 773-K	65 feet south of 182nd Street and 0.3 mile west of Arlington Ave.	Moneta Water Co.	June,1947	Mun	62	16	435	281-288, 315-405	Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBBM		CENTRAL COASTAL PLAIN PRESSURE AREA (4-11.03)									
2S/13W-32C2 1434-J	10 feet east of Nettler Avenue and 200 feet north of 88th Place; 8814 South Nettler Avenue.	Los Angeles Department Water & Power	5-7-38	Mun		14	800	604-645, 750-787	No	No	Yes
3S/13W-2B1 1495-B	35 feet north of Michigan Avenue and 100 feet west of Elizabeth Avenue.	City of Southgate		Mun	105	12	732		No	Yes	Yes
		LOS ANGELES FOREBAY AREA (4-11.04)									
2S/13W-10P4 2764-G	370 feet west of Santa Fe Avenue and 590 feet north of Vernon Avenue, Vernon.	City of Vernon		Mun	205	18	1330		No	Yes	Yes
2S/13W-10R1	372 feet west of Jewel Avenue 620 feet north of Vernon Ave.	Swift and Co.	June, 1956	Ind			1100			No	Yes
2S/13W-14H1	40 feet west of Downey road and 40 feet north of Fruitland Avenue, Vernon.	City of Vernon	1942	Mun	181	18	1300		No	Yes	Yes
2S/13W-15K3	100 feet east of Alameda Street and 40 feet north of 57th Street, Vernon.	Pioneer Paper Co.		Ind		16	531		No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		MAIN SAN GABRIEL BASIN (4-13.01)									
1S/10W-7A1 4239-A	400 feet south of Bonita Avenue and 50 feet west of north Main Avenue.	Baldwin Park Co. Water Dist.		Dom		16	526		No	No	Yes
1S/10W-10G1 4289	0.88 mile east of Irwindale Avenue and 350 feet south of Bonita Avenue (Arrown Highway) south of Azusa.	City of Glendora		Mun Irr	471	26	411	163-406	Yes	Yes	Yes
1S/10W-19N1 3032	0.25 mile southwesterly along Virginia Avenue from intersection with Garvey Avenue and 0.05 mile southeast, southeast of El Monte.	Walnut Place Mutual Water Co.	10-14-50	Irr		12	250	100-136, 140-148	No	No	Yes
1S/11W-2G1 4198	400 feet east of Peck road and 200 feet north of road along ranch line-0.5 mile north of Live Oak Avenue 75 feet north of Jefferies Avenue.	City of Monrovia		Mun	368	26	440	73-132, 136-180, 182-214, 219-350, 370-420	No	No	Yes
1S/11W-10F1	850 feet east of Tyler Avenue at end of Farna Street.	Southern California Water Co.	4-27-51	Mun		18	540		Yes	No	Yes
1S/11W-26K1	Well in line with east end of Valley Blvd. bridge over San Gabriel River 0.1 mile north of Valley Boulevard.	San Gabriel Valley Water Co.	5-25-51	Mun Irr			312		No	No	Yes
1S/11W-32C1	0.3 mile south and 0.03 mile west of intersection of Rush Street with Potrero Avenue.	Pedro Mireles		Dom Irr		10	102	73-97	No	No	Yes
1S/11W-33P1 2956-D	55 feet south of Durfee Road and 0.46 mile southwest of Slack Avenue, south of El Monte.	Ed. Alluis		Dom	230	7	50	40-46	Yes	Yes	Yes
1S/11W-35L1	500 feet north of Workman Mill Road southeast of El Monte.	Scudder Food Products	11-30-51	Dom Irr		12	657		Yes	No	Yes
1S/11W-35N1	0.4 mile northeasterly along Workman Mill road from channel crossing and 30 feet southeasterly from Workman Mill Road.	E. A. Watwood	4-12-52	Dom Irr		10	228	91-94, 133-137, 156-163, 217-221	Yes	No	Yes
1S/12W-25B11	150 feet east of San Gabriel Blvd. and 50 feet south of Newark Avenue extended; 1 block south of Garvey Avenue.	Southern California Water Co.	2-3-56	Dom		16	472		Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		UPPER LAKE VALLEY (5-13)									
15N/9W-31P1	0.25 mile due south of Lakeside Hoepital	C. B. Flick	1953	Dom		8	110				Yes
16N/9W-31L3	0.3 mile due west and 1.45 mile due north of town of Clover north side of farmhouse and west side Pillsbury Lake Road.	Antone Santos	1950	Dom			18				Yes
MDB&M		KELSEYVILLE VALLEY (5-15)									
13N/9W-2L2	East side of Soda Bay Drive (Gaddy Lane) and 0.29 mile north of Rosa Drive.	Ross Field		Irr	1342.08		100		No	No	Yes
13N/9W-3B1	0.24 mile south of Soda Bay Road on west side of Park Drive.	C. Benson		Irr	1346.2	12	60			Yes	Yes
13N/9W-4P1	0.40 mile east of Finley on north side of Highway 29.	C. W. Coppenter		Irr	1353.4	12				Yes	Yes
13N/9W-8C1	0.39 mile west of Thomas Drive on north side of Argonaut Road	Davidson		Irr		12	110			No	Yes
13N/9W-10P2	0.10 mile north of Merritt Lane and 0.32 mile east of Renfro Drive.	J.& M. Kleir	1944	Irr		12	80			No	Yes
13N/9W-12M1	East side of private dirt road and 0.10 mile south of bend from east to north of Clarks Drive.	Lincoln Wright	1942	Irr	1357.7		200				Yes
13N/9W-16D1	0.15 mile south of Merritt Lane on east side of Adobe Creek.	Merritt Fraser	1948	Irr	1382.0	12	232		Yes	Yes	Yes
13N/9W-16D2	On south side of Merritt Lane, northeast corner of farmhouse on east side of Adobe Creek.	Merritt Fraser	1920	Dom		8	30		No	No	Yes
14N/9W-6A2	0.60 mile north and 0.1 mile west of Rocky Point.	Overington		Dom					No	No	Yes
14N/9W-32J2	0.15 mile west of Stone Lane on north side of Soda Bay Road.	Irene D. Morrison	1950	Irr		12	84			No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M											
12N/2E-3N1	200 feet east of State Ranch Road and 0.2 mile north of Kirksville Road.	A. J. Richter		Dom							Yes
12N/2E-9B2	100 feet south of Kirksville Road and 0.5 mile west of State Ranch Road	C. A. Richter	1931	Dom		8	136		No	No	Yes
12N/2E-11M1	0.3 mile south of Hiatt Road and 100 feet east of Jewett Road.	Garner		Dom					Yes	No	Yes
12N/2E-14B1	100 feet south of Varney Road and 0.05 mile east of Red Road.			Dom						No	Yes
12N/2E-16R1	150 feet north of Seymour Road; 150 feet west of State Ranch Road.	L. A. Wright	1946	Dom		8	128		No	No	Yes
12N/2E-23Q1	0.40 mile west of Highway 40 Alt. 20 feet south of Del Monte Avenue.	Haun		Dom					No	No	Yes
12N/2E-26A1	On northwest side of State Highway 24 and 0.1 mile southwest of Robbins Road.	Mrs. Dorothy E. Mullen		Dom			105		Yes	No	Yes
13N/3E-10M2	1.0 mile south of Tudor Road on east side of Sawtelle Avenue.	Roy Rogers		Dom			55		Yes	No	Yes
13N/3E-11Q3	150 feet east of Garden Highway and 0.1 mile south of Wilkie Avenue.	Edward Silva		Irr		12			No	No	Yes
13N/3E-13C1	0.7 mile east of Garden Highway and 0.25 mile south of Wilkie Avenue.	Boccardo Ranch		Irr	42		225		Yes	Yes	Yes
13N/3E-14R1	0.4 mile east of Garden Highway and 1.0 mile south of Wilkie Avenue	H. J. Cheim		Irr	38				No	Yes	Yes
13N/3E-16R1	60 feet west of Sawtelle Avenue and 0.9 mile south of Everglade Road.	Lalsinghrai		Irr	38	20			No	Yes	Yes
13N/3E-23E1	0.1 mile east of Garden Highway and 0.15 mile north of Central Avenue.	Don Rouse		Irr	34	8	50		No	Yes	Yes
13N/4E-21A1	0.7 mile southwest of Swanson Road at west end of Bear River Drive.	C. M. Owen		Irr	50	14	110		No	Yes	Yes
13N/4E-23Q1	0.1 mile north of Kempton Road and 0.25 mile west of Pleasant Grove Road.	J. E. Jopson		Irr	63	14			No	Yes	Yes
13N/5E-7R3	On west side of Brewer Road 0.2 mile north of Bear River Drive.	Nelson	1923	Dom Irr		12	315		No	No	Yes
13N/5E-19R2	On west side of Brewer Road and 0.15 mile north of Kempton Road.	E. J. Gallegher		Irr					No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		TULARE COUNTY (5-21a (Cont.)									
14N/1E-1A1	150 feet west of Progress Road and 1.8 mile north of Oswald Avenue.	Frye Brothers	1940	Dom		8	70		No	No	Yes
14N/1E-2A1	0.3 mile east of Germire Road and 100 feet south of White Road.	S. A. McKeehan	1910	Dom		6	68		No	No	Yes
14N/3E-3C2	250 feet south of Bogue Road and 0.1 mile west of Railroad Avenue.	Basant Singh		Irr	53		154		No	Yes	Yes
14N/3E-5A3	On west side of Grove Road and 0.15 mile south of Bogue Road.	Channah S. Srah		Irr	49	12	106		No	No	Yes
14N/3E-14E2	50 fe t north of Oswald Avenue and 0.1 mile west of Garden Highway.	Littlejohn		Irr Dom	47	16	90		No	Yes	Yes
14N/3E-15H1	0.5 mile west of Garden Highway and 50 feet north of Oswald Road.	James A. Blevins	1947	Dom		8	120		Yes		Yes
14N/3E-16B2	250 feet south of Oswald Road and 0.3 mile west of Sawtelle Avenue.	F. J. Best	January 1946	Dom Irr		8	99		Yes	No	Yes
14N/3E-18A2	0.15 mile south of Oswald Road and 0.2 mile west of George Washington Blvd.	Rennie Mahon	1914	Irr	44	12	125		No	Yes	Yes
14N/3E-23M2	1.4 mile north of O'Bannion Road and 0.25 mile east of Garden Highway.	C. L. Duncan		Irr		14	90		No		Yes
14N/3E-28D1	Southeast corner of intersection of Carlson Road and Hutchinson Road.	L. Ott		Irr		14	170		No	No	Yes
[illegible]	0.15 mile west of State Highway 24 and 0.20 mile north of O'Bannion Road.	J. Serger		Dom							Yes
14N/3E-31B1	0.1 mile south of O'Bannion Road and 0.4 mile west of George Washington Blvd.	L. Ott	December 1953	Irr	38	14	230		No	Yes	Yes
15N/2E-26D2	125 feet east of Humphrey Road and 0.5 mile south of Franklin Road.	E. L. Carothers	1954	Dom		8	87		Yes	No	Yes
15N/3E-4C2	0.25 mile south of Eager Road and 0.75 mile west of U. S. Highway 99E.	A. Eager		Irr	62		147		No	Yes	Yes
15N/3E-26M1	0.31 mile north of Lincoln Road and 0.24 mile east of Garden Highway.	Robert Paillex	1948	Irr	52	14	250		Yes	Yes	Yes
15N/3E-29G1	300 feet west of Ohleyer Road and 0.25 mile south of Franklin Road.	W. A. Glentzer		Irr		10	90		No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		YOLO COUNTY-CAPAY VALLEY (5-21b)									
10N/2W-14A1	1 mile north of Highway 16 on Road 85; east side of road.	Jim Monroe		Irr	200		128			Yes	Yes
10N/2W-16L1	Directly behind house at end of Road 82B.	John Peterson		Dom Irr	231	14	20				Yes
10N/2W-17J1	Under windmill, 0.75 mile north on Road 82 from Highway 16, east side of road.	Howard		Stk	254		25				Yes
10N/2W-18F1	In white pumphouse (25' northeast of house) west fork of Road 79 (north of Highway 16)	Myrtle Bowles		Dom	334		30				Yes
10N/2W-18F2	0.1 mile east on Road 79 from intersection of Road 79 and Highway 16, 0.1 mile north of road. Well southeast of house.	W W. McClary	1952	Irr Dom	335	12, 10 & 8	250				Yes
10N/2W-18L1	0.1 mile west of Highway 16 on Road 79.	V. White		Dom			40				Yes
10N/2W-23A1	100 feet south of Highway 16 behind house, just east of intersection on Road 85 and Highway 16.	C. A. Kutsuris		Dom	215	6	55				Yes
11N/3W-9Q1	100 feet west of house, 1 mile west of Highway 16 on Road 59.	Richard Bloom	1943	Irr Dom	400	12	55		Yes	Yes	Yes
11N/3W-10E1	0.3 mile west of Highway 16 on Road 59; 0.4 mile north of Road 59 in almond orchard.	H. D. Everett	1904		364						Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SACRAMENTO COUNTY (5-21c)									
5N/5E-3F1	West side of Bruceville Road, 0.42 mile south of Lambert Road.	H. Alberg		Irr	20	8	68		No	No	Yes
7N/4E-4R1	2.2 miles northwest of Highway 24 on Pocket Road; 100 feet east of Road.	M. Perry	November 1952	Irr	7.0	12	100		Yes		Yes
7N/5E-7C1	1800 feet west of Western Pacific Railroad tracks on Meadow View Road; 400 feet south of road.	State of California	May 1952	Dom		12	170		Yes		Yes
7N/5E-32J2	1450 feet north, 350 feet west of southeast corner section 32 at Camellia Dairy.	Hans Sutter	July 1948	Irr	22	12	253		Yes		Yes
7N/7E-27P1	At Lee School; 4.0 miles east of Dillard.	Lee School District		Dom	100	8	99		No		Yes
8N/4E-26D1	1.5 mile northwest of Sacramento Municipal Airport on lot 44 South Land Park Terrace Unit 20 between Rosedale and Dorset Ways; 625 feet south of Semas Avenue.	Land Park Water Maintenance Dist.	1954	Mun		12	146		Yes		Yes
8N/5E-15H1	775 feet west on Cucamonga Avenue from Power Inn Road; thence north 770 feet.	State of California	July 1952	Dom	30	12	256		Yes		Yes
8N/5E-24M1	0.1 mile east of Florin Road and 0.3 mile north of Fruitridge Road.	Haight		Irr							Yes
8N/5E-30N1	4300 feet south and 1300 feet east of northwest corner section 30.	Antone Amarel	February 1951	Irr	19	10	100		Yes		Yes
9N/5E-15N1	0.1 mile east of Palm Drive on Arcade Blvd.	Citizens Utilities Co. of California		Dom	30	12	205		Yes		Yes
9N/5E-20L1	100 feet east of Grove Avenue on Eleanor Avenue.	Citizens Utilities Co. of California		Dom	30	12	415		Yes		Yes
9N/5E-21C1	300 feet north of Acacia Avenue on 12th Street.	Citizens Utilities Co. of California		Dom	30	12	238		Yes		Yes
9N/5E-21E1	300 feet north of Alamos Avenue on Branch Street.	Citizens Utilities Co. of California		Dom	30	12	440		Yes		Yes
9N/5E-29D1	25 feet west of Colfax Avenue on Stanford Avenue.	Citizens Utilities Co. of California		Dom	30	12	195		Yes		Yes
9N/5E-29L1	100 feet west of Canterbury Road on South Gate Road.	Citizens Utilities Co. of California		Dom	30	12	300		Yes		Yes
9N/5E-32Q1	0.15 mile north of "C" Street. First northerly road, east of Tivoli Way.	G. L. Weister		Dom		12					Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SACRAMENTO COUNTY (5-21c) (Cont.)									
9N/6E-6Q1	1300 feet north of Madison Avenue on Harrison Street.	N. Koshell	1936	Dom			65				Yes
9N/6E-19P1	125 feet west of Eastern Avenue; 0.2 mile south of Marconi Avenue.	O. A. Melby		Dom		6	140				Yes
9N/6E-25H1	At Fair Oaks wye; 3.0 mile northeast of Mills on U. S. Highway 50.	J. W. Edwards	1913	Dom		8	260				Yes
9N/7E-15F1	100 feet north of old Highway 50; 0.8 mile west of Nimbus.	C. O. Kemper		Dom	154		118				Yes
9N/7E-16P1	50 feet north of old Highway 50; 100 feet west of west end of Packing Plant.	Libby-McNeil and Libby	1950	Ind	145	10	185		Yes	Yes	Yes
9N/7E-26H1	In green lat.. octagonal house on south side of Mills-White Rock Road.	Capitol Dredging Co.		Dom	275	6	25			Yes	Yes
9N/7E-27J1	On south side of Mills-White Rock Road at Ney School site.	H. Collier		Dom	235	6				Yes	Yes
9N/7E-28B1	At Aerojet Corp. Nimbus.	Aerojet Corp.	March 1951	Ind	180		325		Yes		Yes
9N/7E-28K1	800 feet south of 28B1, Aerojet Corp.	Aerojet Corp.	April 1956	Ind		16 & 12	335		Yes	No	Yes
9N/7E-32B1	4.3 miles east of Mi le on White Rock Road; 100 feet north of road.	J. A. Rogers		Dom							Yes
9N/7E-33E1	4.8 miles east of Mills on White Rock Road; 0.27 mile southof road.	Ben Petruci		Irr Dom							Yes
10N/4E-23A1	0.8 mile west of intersection of Elverta Road and West Levee road; 75 feet south of road.	Westby	1946	Dom	15	6	85				Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SAN JOAQUIN COUNTY (5-22a)									
1N/6E-3R	At Poplar and Monroe Streets, Stockton.	California Water Service Co.	June 1909	Mun		14 & 12	250				Yes
1N/6E-4D1	Southwest corner of intersection of Marine Street and Michigan Street.	California Water Service Co.	Nov. 1945	Mun	5.7	16	575			Yes	Yes
1N/6E-4J1	At Victory Park on Pershing between Acacia and Varnal Way.	City of Stockton		Mun		12	250				Yes
1N/6E-10E2	At intersection of Weber and Pershing Avenues, Stockton.	Union Ice Co.	June 1949	Ind			207				Yes
1N/6E-10P1	800 West Church Street, Stockton.	Fibreboard Products Co.	1922			14	1130				Yes
1N/6E-10P2	800 West Church Street, Stockton.	Fibreboard Products Co.	1918				970				Yes
1N/6E-10P3	800 West Church Street, Stockton.	Fibreboard Products Co.									Yes
1N/6E-14C1	At Jackson and Center Streets, Stockton.	California Water Service Co.	Sept. 1916	Dom		20	491				Yes
1N/6E-14C2	Southeast corner of intersection of West Jackson Street and South Center Street.	California Water Service Co.		Mun		16	459		Yes		Yes
1N/6E-14H1	At Fourth and Grant Streets, Stockton.	California Water Service Co.	April 1949	Dom		16 & 12	418				Yes
1N/7E-11J1	0.1 mile south of Farmington Road on west side of Kaiser Road			Irr							Yes
1N/9E-18G1	0.75 mile east of Hewitt Road and 1.0 mile north of Farmington Road.	Slang		Irr							Yes
2N/8E-10C1	0.1 mile south of Waterloo East Road, 0.49 mile east of Duncan Road.			Irr							Yes
3N/6E-27B1	0.32 mile east of Lower Sacramento Road and 150 feet south of Armstrong Road.	G. Barbero		Dom Irr							Yes
4N/7E-23B2	East side of Tretheway Road and 0.1 mile south of Peltier Road.	S. Gaberoglia		Dom Irr							Yes
1S/7E-2A1	20 feet west of Kaiser Road and 1.2 mile south of junction of Kaiser Road and Atchison Topeka & Santa Fe Railroad tracks	Bert Maurer	1953	Irr			253		Yes		Yes
1S/7E-2A2	1000 feet west of Kaiser Road; 1.2 miles south of Kaiser Road and Atchison Topeka & Santa Fe Railroad tracks.	Bert Maurer	1957	Irr			600		Yes		Yes
1S/7E-10A1	On west side of Austin Road and 0.1 mile north of Lynch Road.			Irr	42.1						Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SAN JOAQUIN COUNTY (5-22a) (Cont.)									
2S/4E-1P1	On north side of Bethany Road and 0.7 mile west of Lammers Road.	O. B. Dusina		Dom		8	233				Yes
2S/4E-16A1	200 feet north of Patterson Pass Road and old Highway 50.	M. R. Furtado		Dom			68				Yes
2S/4E-28A1	4.0 miles west of Tracy on Patterson Pass Road, 0.5 mile south of new Highway 50.	Art Boltzen	1945	Dom		8	290		Yes		Yes
2S/4E-33J1	At corner of Patterson Pass Road where it makes a right turn to Midway.	Morris Vierra		Stk							Yes
2S/4E-36P1	0.2 mile south of Valpico Road on Lammers Road, 0.6 mile west of Lammers Road on dirt road.	H. C. Jepson	5-5-51	Irr		14 & 12	695		Yes		Yes
2S/4E-36R2	Corner of Valpico and Lammers Road.	Shell Oil Co.		Dom Irr			300				Yes
2S/5E-16Q1	0.4 mile north of Tracy; 300 feet east of Holly and Court Roads near North School.	Price	1955	Dom		7	102		Yes		Yes
2S/5E-17B1	0.5 mile north of Tracy. 3690 feet east of junction of Corral Hollow and Larch Roads.	Jones	1954	Dom			90		Yes		Yes
2S/5E-17R1	0.2 mile west of Tracy Road on Grant Line Road and 150 feet north of Grant Line Road.	M. Gomes & Sons	12-31-54	Irr			688		Yes		Yes
2S/5E-19D1	0.1 mile southeast of Grant Line Road; then 0.2 mile south, 1.0 mile west of Corral Hollow Road.	J. Furtado		Irr							Yes
2S/5E-22Q1	0.3 mile east of Tracy; turn right on first road before overpass; continue on road under overpass, 0.3 mile to well.	West Side Irrigation Dist.	4-5-49	Irr		18, 16 & 12	1136		Yes		Yes
2S/5E-23P1	0.25 mile east of Christman Road on Highway 50; on north side of Highway 50.	West Side Irrigation Dist.		*					Yes		Yes
2S/5E-28L1	In city of Tracy: Northwest corner of South Street and "C" Street.	City of Tracy	8-29-53	Mun		16 & 12	930		Yes		Yes
2S/5E-28P1	300 feet north of Schulte Road and South "C" Street intersection.	Elmer Lynn	1954	Dom			108		Yes		Yes
2S/5E-29B1	0.5 mile south of Highway 50 on Corral Hollow Road; 0.3 mile east of Corral Hollow Road along irrigation canal.	West Side Irrigation Dist.		*					Yes		Yes
2S/5E-31J1	2.0 miles south of Tracy; south of Schulte and Corral Hollow Roads intersection.	W. S. Parker		Dom			72		Yes		Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

* Drainage

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		SAN JOAQUIN COUNTY(5-22a) (Cont.)									
2S/5E-32R1	0.9 mile south of Schulte Road on Jefferson Road.	West Side Irrigation District	1949	Irr.		16 & 12	800		Yes		Yes
2S/5F-34A1	500 feet west of junction of Chrisman and Schulte Roads.	Peterson	1956	Dom. Irr.			136		Yes		Yes
2S/6E-20J3	6.0 miles east of Tracy Deuel Vocational School #3.	State of California		Dom.			500		Yes		Yes
3S/5E-8L1	0.4 mile east of Corral Hollow Road on dirt road and 0.5 mile south of Linne Road.	L. Huck	1933	Dom.		8	265				Yes
3S/5F-20A1	5.0 miles south of Tracy on Jefferson Road, northeast corner section 20.	Rose Brothers					851		Yes		Yes
3S/5E-26M1	3.0 miles south of Tracy	W. Moler	1950	Irr.			820		Yes		Yes
3S/5E-35D1	On east side of Chrisman Road and 1.2 miles south of Delta-Mendota Canal.	W. Moler	1949	Irr.		12	832				Yes
3S/6E-15M1	1.0 mile east of New Jerusalem School on Durham Ferry Road, 1500 feet north of Durham Ferry Road.	Keyser and Lindeman		Irr.			887		Yes		Yes
3S/6E-15Q1	1.7 miles east of New Jerusalem School on Durham Ferry Road, 1000 feet north of Durham Ferry Road.	Keyser and Lindeman		Irr.			832		Yes		Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		STANISLAUS COUNTY (5-22b)									
1N/10E-15D1	3.5 miles east of Waverly Road.	Albert Groves		Irr		16	280				Yes
1S/10E-33R1	On north side of irrigation canal and east of 26 mile road.	Jim Dunn	6-16-51	Irr		14	420		Yes	No	Yes
1S/11E-36E1	On south side of Orange Blossom Road; 0.4 mile east of east leg of Horseshoe Road.	J. Demartini									Yes
2S/10E-10D1	On River Road, 0.25 mile west and 200 feet south of junction River Road and Oakdale Highway.	A. Ramirez	3-21-56	Irr		10	355		Yes	No	Yes
2S/10E-27G1	0.5 mile west of Albers Road on north side of Patterson Road.	Oakdale Land Co.	10-1-54	Irr		16	475		Yes		Yes
2S/10E-36N1	200 feet north of southwest corner Section 36.	P. Giambanco	12-16-55	Ind Dom			584		Yes		Yes
3S/7E-33C1	Maze Road at Hetchy pipeline.	J. E. Gardner		Dom		67			No		Yes
3S/11E-9D1	1.0 mile south of Claribel Road on Ellenwood Road; 0.2 mile east of Ellenwood Road.	V. A. Rodden Ranch	7-28-50	Irr Dom			802		Yes		Yes
3S/12E-26P1		H.E. Ketcham					400				Yes
3S/13E-32D1		R. Cres					400				Yes
4S/6E-12N	0.1 mile east of McCraken Road on Gaffery Road.	I. Russel		Irr							Yes
4S/6E-15E1	400 feet south of Gaffery.	J. J. Raspo		Irr							Yes
4S/6E-24P1		Glen Alard		Irr							Yes
4S/7E-16E1	0.9 mile north of West Station Road on River Road.	West Stanislaus Irrigation Dist.		Irr							Yes
4S/7E-19G1	0.7 mile south of Gaffey Road on McCraken Road; 1.4 mile east of McCraken along irrigation canal.	W. W. Cox		Irr			410		No		Yes
4S/7E-21H1	0.7 mile southeast of West Station Road on River Road.	F. Lara & Son	1-29-50	Irr		16	355		Yes		Yes
4S/7E-34J1	0.5 mile east of Highway 33 on Frank Cox Road.	Frank Cox	3-9-55	Irr		18 & 14	386		Yes		Yes
4S/8E-27L1		Turlock Irrigation Dist	July 1944	Irr		18 & 16	264		Yes		Yes
4S/9E-20A1		Turlock Irrigation Dist	Feb. 1933	Irr		29 & 18	130		Yes		Yes
4S/9E-25A1	On west side of Faith Home Road at end of Keyes Drive.	Turlock Irrigation Dist	June 1933	Irr		18	179		Yes		Yes
4S/9E-30R1		Turlock Irrigation Dist	June 1924	Irr		16 & 12	88		Yes		Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		STANISLAUS COUNTY (1-42b, Cont.)									
4S/10E-1D1		Johnson Bros.		Irr		10 & 18	525		Yes		Yes
4S/11E-5M1	On left bank of Tuolumne River.	J. W. Short	8-18-54	Irr		19-12-10	525		Yes		Yes
4S/11E-21D1	Southwest corner intersection Lateral 2½ and Main canal.	Turlock Irrigation Dist.	Feb. 1948	Irr		16	180		Yes		Yes
5S/7E-2H1	0.7 mile north of Condit Road on Vineyard Road.	D. Cox	5-10-55	Irr		18 & 12	395		Yes		Yes
5S/7E-9H1	0.1 mile west of Raines Road on Minnear Road.	Helena Raines		Irr			320				Yes
5S/7E-23B1	0.2 mile west of Baldwin Road on Zacharias Road.	C. Zacharias	1913	Irr		14	350		Yes		Yes
5S/8E-1R1	Northwest corner intersection Carpenter Road and Monte Vista Road.	Turlock Irrigation Dist.	Nov. 1949	Irr		18 & 16	266		Yes		Yes
5S/8E-8G1	2.25 miles east of Highway 33 on Magnolia Avenue; 0.25 mile south of Magnolia on east side of irrigation canal.	T. & T. Ranch	6-15-54	Irr	50	16	215		Yes		Yes
5S/8E-27M1	On Elm Avenue 200 yards north of Almond.	Y. Puch	10-24-54	Irr	61	6	268		Yes		Yes
5S/8E-30C1	0.25 mile east of Patterson; south well in front of cannery.	Patterson Canning Co.	1947	Ind	90		300		Yes		Yes
5S/9E-9A1	Northeast quarter of the northeast quarter Section 9.	Turlock Irrigation Dist.	Jan. 1929	Irr		18	65		Yes		Yes
5S/9E-13G1	Southwest quarter of the northeast quarter Section 13.	B. Ellis	April 1925	Irr		16 & 10	69		Yes		Yes
5S/9E-35Q1	Southwest quarter of the southeast quarter Section 35.	Turlock Irrigation Dist.	Jan. 1935	Irr		24	268		Yes		Yes
5S/10E-4F1	On Zeering Road east of Highway 99.	Turlock Irrigation Dist.	May 1933	Irr		18 & 14	240		Yes		Yes
5S/10E-28H1	On west side of Walnut Avenue between Glenwood Avenue and Simmone Avenue.	Turlock Irrigation Dist.		Irr		18 & 14	168		Yes		Yes
5S/10E-30F1	0.5 mile north of Harding Avenue on west side of Commons Avenue.	Turlock Irrigation Dist.	June 1935	Irr		24 & 16	265		Yes		Yes
5S/11E-7P1	On north side of Hawkeye Avenue between Waring and Lester Roads.	Turlock Irrigation Dist.	March 1936	Irr		18 & 16	288		Yes		Yes
5S/12E-6D1	Montpellier	R. Perkins	2-1-51	Irr		16-14-12	480		Yes		Yes
6S/9E-1Q1	Southwest corner intersection Flower Drain and Lateral No. 5½	Turlock Irrigation Dist	April 1949	Irr		18	264		Yes		Yes
6S/9E-18F1		J. W. Campbell	10-15-51	Irr		16			Yes		Yes
6S/10E-7D	Northwest quarter of the northwest quarter Section 7.	Turlock Irrigation Dist	Sept.1953	Irr		18	270		Yes		Yes
7S/8E-12P1		Central Calif. Irr. Dist	Jan.1954	Irr		16 & 14	427		Yes		Yes
7S/8E-22K		H. T. Krogh		Irr			208		No	No	Yes
7S/8E-23R1		Central Calif. Irr.Dist	Feb. 1954	Irr			341		Yes		Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		MERCED COUNTY (5-22c)									
5S/12E-32P1	0.3 mile south of Ballico Ave on Santa Fe Drive, 1.0 mile east of San Fe Drive; 0.1 mile north.	W. S. Batterman	1957	Irr	170	12 & 10	555		Yes		Yes
6S/10E-9B1		Turlock Irrigation Dist.		Irr		18 & 14	266		Yes		Yes
6S/10E-28K1		Riverside School	1927	*		18 & 12	166		Yes		Yes
6S/11E-9C1		Turlock Irrigation Dist.	1939	*		14 & 12	205		Yes		Yes
6S/11E-10J1		Turlock Irrigation Dist.	1927	*		16	100		Yes		Yes
6S/11E-27K1		Merced Irrigation Dist.	1956	Irr		14	63		Yes		Yes
6S/12E-5J1	0.6 mile north of El Capitan Road; 0.2 mile east of Santa Fe Drive.			Irr	160		500±		No	No	Yes
6S/12E-7B1	0.25 mile east of Ballico Avenue on El Capitan Road; 0.1 mile south of El Capitan Road.	A. Ferrari		Irr	150	12,10 & 8	320		Yes		Yes
6S/12E-8D1	0.4 mile west of Santa Fe Drive on El Capitan Road; 100 feet south of El Capitan Road.	C. Roberts		Dom	132		60		No	No	Yes
6S/12E-8D2	0.4 mile west of Santa Fe Drive on El Capitan Road; 0.2 mile south of El Capitan Road.	L. Roberts		Dom	122		120		No	No	Yes
6S/12E-9D1	0.1 mile west of intersection of Lee, Santa Fe, and El Capitan Roads.	C. W. Magneson		Dom	115	8	100		No	No	Yes
6S/12E-21N1	On east side of Cressey Way between Walnut and Olive Avenue.	Merced Irrigation Dist.	1924	Irr		20 & 14	140		Yes		Yes
6S/12E-23H1		Merced Irrigation Dist.	1945	Irr		18	76		Yes		Yes
6S/13E-6N1		Merced Irrigation Dist.	1941	Irr		14	54		Yes		Yes
6S/13E-31F1		Merced Irrigation Dist.	1928	Irr		18 & 16	93		Yes		Yes
7S/9E-32H1		Central California Irrigation Dist.		Irr		14	137		Yes		Yes
7S/12E-1Q1		Merced Irrigation Dist.	1951	Irr		14	145		Yes		Yes
7S/12E-3F1		Merced Irrigation Dist.	1923	Irr		20	95		Yes		Yes
7S/12E-8E1		Merced Irrigation Dist.	1923	Irr		20	76		Yes		Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk) *Drainage.
b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		MERCED COUNTY (5-22c) (Cont.)									
7S/12E-19A1		Merced Irrigation Dist.	2-2-27	Irr		18	80		Yes		Yes
7S/13E-4P1		Merced Irrigation Dist.	10-25-23	Irr		20	70		Yes		Yes
7S/13E-19H1		Merced Irrigation Dist.	4-8-29	Irr		18 & 16	158		Yes		Yes
7S/13E-22Q1		Merced Irrigation Dist.	1923	Irr		20	148		Yes		Yes
7S/14E-28J1		Merced Irrigation Dist.	2-25-30	Irr			145		Yes		Yes
7S/15E-30E1		Merced Irrigation Dist.	Jan. 1938	Irr		18	102		Yes		Yes
7S/15E-34R1		Merced Irrigation Dist.	1-4-37	Irr		18	172		Yes		Yes
8S/9E-16E1		Gustine Drainage Dist.		Irr		14	105		Yes		Yes
8S/14E-2D1		Merced Irrigation Dist.		Irr		18	190		Yes		Yes
8S/14E-24A1		Merced Irrigation Dist.	1949	Irr		18 & 14	397		Yes		Yes
8S/16E-17P1		Merced Irrigation Dist.	Jan. 1942	Irr		18	260		Yes		Yes
9S/9E-5B1		Gustine Drainage Dist.		Irr			102		Yes		Yes
9S/9E-21F1		Central California Irrigation Dist.	March 1954	Irr		16	138		Yes		Yes
9S/10E-36R1		State Game Refuge	4-12-52	Irr Dom		16	224		Yes		Yes
9S/13E-31D1		Miller & Lux	March 1948	Irr			220		Yes		Yes
10S/10E-28D1		Central California Irrigation Dist.	1954	Irr		18 & 14	250		Yes		Yes
10S/12E-6K1		Bisignani Bros.	3-10-48	Irr		16	179		Yes		Yes
10S/12E-25L		San Luis Canal Co.	12-19-53	Irr		18 & 14	207		Yes		Yes
10S/12E-27K1	At Head of branch # 5	Central California Irrigation Dist.	12-24-53	Irr		18 & 14	154		Yes		Yes
10S/12E-35K1		Central California Irrigation Dist.	1-9-54	Irr		18 & 14	185		Yes		Yes
11S/10E-23K1		R. L. Lindman		Irr							Yes
12S/11E-3C1		Sam Hamburg		Irr							Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		MADERA COUNTY (5-32d)									
9S/15E-24F1	0.7 mile west of old Highway 99 at Minturn on dirt road.	Roger Jessup									Yes
9S/16E-30G1	0.4 mile north of Robertson Blvd. on First Street.	City of Chowchilla	5-22-56	Mun		18	548		Yes		Yes
9S/16E-35N1	0.4 mile north of Avenue 24 on Road 19; 0.1 mile east of Road 19.	Will Baker		Irr			575		No		Yes
10S/14E-8B1	100 feet south of Highway 152 on west side of Chowchilla Canal.	Red Top Ranch		Irr			150		No		Yes
10S/14E-24B1	0.5 mile west of Road 9 on Avenue 21 on north side of Road.	Ed Hughes		Irr		14	150		Yes		Yes
10S/15E-31A1	0.1 mile west of Road 10 on Avenue 19.	Homer Probert		Irr		14	150		No		Yes
10S/16E-24H1	0.15 mile south of Highway 99 on Road 21.	H. Wilson		Irr		14	200		No		Yes
10S/16E-30K1	1.0 mile north of Avenue 18½ on Road 16; 0.3 mile west of Road 16 on dirt road.	H. C. Shelton					160		No		Yes
10S/17E-25N1	1.3 mile south of Avenue 20½ on Road 26.	Madera Country Club	9-1-54	Dom Irr		14	276		Yes		Yes
11S/14E-1A1	0.7 mile south of Avenue 18½ on Road 9 extended.	Red Top Ranch		Irr			350		No		Yes
11S/14E-9G1	2.2 miles west of Chowchilla Canal on Avenue 18½; 1.8 mile south on dirt road.	Diamond T Ranch		Irr					No		Yes
11S/14E-20L1	2.2 miles west of Chowchilla Canal on Avenue 18½; 3.5 mile south on dirt road; 1.0 mile west thence 0.9 mile south.	Diamond T Ranch		Irr					No		Yes
11S/15E-23L1	0.5 mile north of Avenue 14 and 0.5 mile west of road 14.	Henry B. Shein		Irr			208		Yes		Yes
11S/15E-29H1	5.1 miles south of 11S/14E-1A1 on west side of canal heading south.	Red Top Ranch		Irr		14	350				Yes
11S/16E-22K1	0.4 mile north of Avenue 14 on road 19; 0.3 mile west of road 19 on dirt road; thence 0.1 mile south.	L. J. Peatman	4-1-57	Irr		16 & 10	308		Yes		Yes
11S/17E-25B1	0.4 mile south of Highway 99 on Madera Avenue; 0.4 mile west of Madera Avenue on Maple Avenue; thence 500 feet south of Maple.	City of Madera	6-15-55	Mun			552		Yes		Yes
11S/18E-17H1	0.2 mile north of intersection Road 29 and Avenue 15½ .	Santa Fe Railroad		Dom			436		No		Yes
12S/14E-17B1	At Allens River Ranch House (abandoned).	Arvid Allen		Irr		12	240				Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		MADERA COUNTY (5-12-1) (Cont.)									
12S/14E-34H1	1.0 mile south of Madera; Firebaugh road on East Side Ranch road.	East Side Ranch	3-27-56	Irr		12 & 10	248		Yes		Yes
12S/15E-4K1	2.1 mile south of 11S/15E-29H1 on Chowchilla Canal.	Red Top Ranch		Irr		14	280		No		Yes
12S/15E-22F1	0.2 mile north of Madera-Firebaugh Road along Chowchilla Canal.	Red Top Ranch		Irr			350		No		Yes
12S/15E-27G1	0.6 mile north of Firebaugh-Fresno Road; 1.4 mile southeast of Firebaugh-Madera Road.	W. Gillis		Irr			175		Yes		Yes
12S/17E-5R1	0.3 mile south of Avenue 11½ on Road 23.	Beard		Irr			400		No		Yes
12S/17E-24A1	2.3 miles south of Avenue 11 on Madera Avenue.	Libbiee Ranch		Irr		18	318		Yes		Yes
12S/18E-14J1	0.6 mile south of Avenue 10 on Road 32.	Iverson & Carlton		Irr		14 & 12	253		Yes		Yes
13S/15E-22J1	2.5 miles southeast of Pomona Ranch on Columbia Drive; across canal, thence 0.1 mile south.	Columbia Canal Co.	4-6-56	Irr			250		Yes		Yes
13S/16E-2C1	0.6 mile west of Road 20 on Avenue 6.	K. Seibert				14	360		Yes		Yes
13S/17E-5P1	0.5 mile west of Road 23 on Avenue 5; 0.1 mile north of Avenue 5.	George Roberts	2-22-51	Irr		14	250		Yes		Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		FRESNO COUNTY - WESTSIDE AREA (5-22e)									
11S/12E-13J1		Dos Palos Drainage Dist.	6-18-54	*		16	116		Yes		Yes
11S/13E-17F1	At head of east ditch.	Central California Irr. Dist.		Irr		18 & 14	161		Yes		Yes
11S/13E-36B1		Miller & Lux	2-20-54	Irr		18 & 14	230		Yes		Yes
12S/13E-9C1		Redfern Ranch		Irr			151		Yes		Yes
12S/14E-29B1		J. Indart	4-27-53	Irr		16	250		Yes		Yes
13S/15E-18L1		Locke Bros.	Sept.1949	Irr		18 & 16	330		Yes		Yes
14S/13E-12N1	Northeast cornsr of intersection of Newcomb Avenue and California Avenue.	Pappas & Co.		Irr		16	1450			Yes	Yes
14S/13E-21N1	Northeast corner of intersection of Fairfax Avenue and North Avenue.	Employees Enterprisee		Irr			1889				Yes
14S/13E-22N1	On north side of North Avenue and 1.0 mils east of Fairfax Avenue.	Employees Enterprises		Irr		16	1710				Yes
14S/13E-25N1	Northeast corner of intersection of Central Avenue and Newcomb Avenue.	Pilibos Bros.		Irr		16	1687			Yes	Yes
14S/14E-9M1	On east side of Washos Avenue and 0.3 mile north of California Avenue.	Pappas & Co.		Irr		16	1400				Yes
14S/14E-11N1	On east side of San Bernardino Avenue and 0.1 mils north of California Avenue.	Vista Del Llano		Irr Dom		16	696				Yes
14S/14E-12N1	On east side of Ohio Avenue and 0.1 mile north of California Avenue.	Jack Scanes		Irr		16	900				Yes
14S/14E-17Q1	300 feet north of Jensen Avenus and 0.5 mile west of Washoe Avenue.	William Giacone	Feb. 1956	Irr			850				Yes
14S/14E-28E1	On east side of Washoe Avenue and 0.4 mile south of North Avenue.	Murietta Farms		Irr		16	1195				Yes
14S/15E-31N1	Northeast corner of intersection of State Highway 33 and Washington Avenue.	L. A. and J. W. Jones		Irr			1200			Yes	Yes
15S/12E-1N1	Northeast corner of intersection of Lincoln Avenue and Millux Avenue.	Employees Enterprises		Irr		16	1873			Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)
* Drainage Well

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		FRESNO COUNTY - WESTSIDE AREA (5-22e) (Cont.)									
15S/13E-5R1	On north side of Lincoln Avenue and 0.2 mile west of Fairfax Avenue.	Employees Enterprises		Irr		16	1528			Yes	Yes
15S/14E-4D1	Northeast corner of intersection of Washoe Avenue and Washington Avenue.	Murietta Farms		Irr		16	1655				Yes
15S/14E-36Q2	On north side of Floral Avenue and 0.5 mile west of State Highway 33.	F. A. Yearout		Irr		16	1734			Yes	Yes
15S/15E-20N2	Northeast corner of intersection of Manning Ave. and Monterey Avenue.	Pucheu		Irr		16	1176				Yes
15S/15E-25N1	Northeast corner of intersection of Tuolumne Avenue and Dinuba Avenue.	Reece Bros.		Irr		12	532			Yes	Yes
15S/15E-27N1	Northeast corner of intersection of Dinuba Avenue and Stanislaus Avenue.	Reece Bros.		Irr		16	589			Yes	Yes
15S/15E-35N1	Northeast corner of Floral Avenue and San Mateo Avenue.	Reece Bros.		Irr							Yes
15S/16E-7Q1	North side of Adams Avenue and 0.65 mile east of Calaveras Avenue.			Irr							Yes
16S/14E-10Q1	North side of Mountain View Avenue and 1.3 mile west of Ohio Avenue.	William Deal		Irr		16	1685				Yes
16S/15E-8N1	Northeast corner of intersection of Mountain View Avenue and Montsrey Avenue.	F. A. Yearout		Irr		16	1668			Yes	Yes
16S/15E-24N2	On east side of Tuolumne Avenue and 0.2 mile north of Conejo Avenue.			Irr		16				Yes	Yes
16S/15E-25Q1	On north side of Clark Avenue and 0.5 mile east of Tuolumne Avenue.	Vista Del Llano		Irr		16	1694			Yes	Yes
16S/16E-6N1	Northeast corner of intersection of Nebraska Avenue and Calaveras Avenue.	Gragnani Bros.		Irr		16	896			Yes	Yes
16S/16E-9N1	On north side of Mountain View Road and 0.1 mile east of Sonoma Avenue.	Rabb Bros.		Irr		14	560			Yes	Yes
16S/16E-20N1	Northeast corner of intersection of Conejo Avenue and Amador Avenue.	Vista Del Llano		Irr		14	531			Yes	Yes
17S/16E-18E1	On east side of Calaveras Avenue and 0.4 mile south of Cerini Avenue.	Vista Del Llano		Irr		16	1615				Yes
17S/16E-24N1	Northeast corner of intersection of Colusa Avenue and Mt. Whitney Avenue.	Harnish Bros.		Irr		16	1518				Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		FRESNO COUNTY - WEST SIDE AREA (5-22e) (Cont.)									
17S/17E-23Q1	On north side of Mt. Whitney and 0.6 mile east of Lassen Avenue in Five Points.	H. W. Deavenport		Irr	224		589		Yes	Yes	Yes
17S/17E-27R1	Northwest corner of intersection of Lassen Avenue and Laguna Avenue.	H. W. Deavenport		Irr		16	660		Yes		Yes
18S/16E-24N1	Northeast corner of intersection of Oakland and Colusa Avenue.			Irr							Yes
18S/17E-13Q1	On north side of Cadillac Avenue and 0.5 mile west of Madera Avenue.	F. C. Diener		Irr			1650				Yes
18S/17E-30P1	On north side of Packard Avenue and 0.75 mile west of Butte Avenue.	Beneon		Irr		16	1995			Yes	Yes
18S/17E-33N1	Northeast corner of intersection of Lake Avenue and Ford Avenue.	Calflax		Irr		16	2209			Yes	Yes
19S/17E-13N1	Northeast corner of intersection of Siskiyou Avenue and Cole Avenue.	Giffen Inc.		Irr		16	2170			Yes	Yes
19S-17E-34N1	Northeast corner of intersection of Trinity Avenue and Kent Avenue.	Giffen Inc.		Irr		16	2131			Yes	Yes
19S/18E-23D2	Southeast corner of intersection of Jameson Avenue and Idaho Avenue.	Boston Land Co.		Irr		16	2110			Yes	Yes
19S/19E-30B2	On south side of State Highway 198 and 0.5 mile west of 27th Avenue.	H. I. Black		Irr		16	1250				Yes
20S/15E-25D2	2.0 miles north of Jayne Avenue and 3.0 miles east of State Highway 33.	Allen		Irr		18					Yes
20S/15E-26M1	1.3 miles north of Jayne Avenue and 2.0 miles esst of State Highway 33.			Irr							Yes
20S/16E-4P2	0.5 mile east of Sonoma Avsnue and 0.2 mile north of Kaneas Avenue.	Shell Oil Co.		Ind		8	823			Yee	Yee
20S/17E-9R1	On north side of Laneing Avenue and 0.15 mile west of Trinity Avenue.	Giffen Inc.		Irr		16	2145				Yss
20S/17E-11N1	0.25 mile north of Laneing Avenue on Lassen Avenue, 200 ft. east of Lassen Avenue.	Paul Kucher		Irr						Yes	Yes
20S/17E-36D1	1.0 mile north of Jayne Avenue and 1.0 mile east of Modoc Avenue.	S. & V. Thomas		Irr		18	2092				Yes
20S/18E-24D1	On southeast corner of intersection of 29th Avenue and Lincoln Avenue.	Boston Land Co.		Irr		16	2012				Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDBLV		FRESNO COUNTY - BASIN CITY OIL FIELD AREA (F-22e)									
15S/17E-1L1	0.5 mile south of intersection of American and Madera Avenue on west side of Madera Avenue.	Edmund Juste		Irr							Yes
15S/17E-10R1	5.0 mile southwest of Kerman, east side of Lassen Avenue 150 feet north of canal bridge.	James Irrigation Dist.		Irr			206		Yes		Yes
15S/17E-11F1	0.24 mile north of section line; 0.5 mile east of canal and section line.	Signal Oil Co.		Dom							Yes
15S/17E-12J1	1.52 miles south of American Avenue and 30 feet west of Madera Avenue.			Irr		12					Yes
15S/17E-13G1	100 feet north of Sumner Avenue, 0.38 mile west of Madera Avenue.	Dunlap & Graham		Dom Ind							Yes
15S/17E-13R1	90 feet west of Madera Avenue south side of Seaboard Oil Co. yard, near offices.	Seaboard Oil Co.		Dom			180				Yes
15S/17E-14G1	0.10 mile north of Sumner Avenue and 1.51 mile west of Madera Avenue.	Seaboard Oil Co.		Dom Ind							Yes
15S/17E-15R1	0.15 mile south of north section line and 0.30 mile west of east section line, Section 15.	Signal Oil Co.		Dom		6 & 8	200				Yes
15S/17E-15F1	0.4 mile south of canal bridge on Lassen Avenue; 0.5 mile west of Lassen Avenue.	Nobel		Irr							Yes
15S/17E-22R1	East side of Lassen Avenue, 2.7 miles north of the intersection of Lassen Avenue and McMullen Grade.	James Irrigation Dist.		Irr			190		Yes		Yes
15S/17E-27H2	0.4 mile south of 22R1 on Lassen Avenue.	James Irrigation Dist.		Irr							Yes
15S/17E-34A2	1.7 miles north of Lassen Avenue and McMullen Grade on east side of Lassen Avenue.	James Irrigation Dist.		Irr							Yes
15S/17E-34G1	1.1 miles north of intersection of McMullen and Lassen Avenue on Lassen Avenue; east side of Lassen Avenue.	James Irrigation Dist.		Irr							Yes
15S/18E-19G1	3.6 miles northeast of intersection of McMullen Grade and Madera Avenue, 50 feet northwest of McMullen.	James Irrigation Dist.		Irr			267		Yes	Yes	Yes
15S/18E-20G1	2.15 miles northwest of intersection of McMullen Grade and Madera Avenue, 50 feet northwest of McMullen.	James Irrigation Dist.		Irr	201		293		Yes	Yes	Yes
15S/18E-20N1	150 feet north and 100 feet west of intersection of Manning Avenue and McMullen Grade.	James Irrigation Dist.		Irr			276		Yes		Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SB&M		KERN COUNTY (5-22f)									
11N/19W-8R1	85 feet north of Section Line (Weedpatch Road) 0.10 mile west of Section Line (Wheeler Ridge Road).	Richard Calciano	Jan. 1953	Irr.	683	14	1202		-	-	Yes
11N/20W-8R1	25 feet west of Section Line Road, 60 feet north of Section Line Road.	Walker O. Fry	Jan. 1948	Irr.	440	16	1001		Yes	Yes	Yes
12N/19W-33R1	200 feet west of Section Line Road, 140 feet north of Section Line Road.	R. A. Hildebrand	Nov. 1947	Irr.	548	-	1029		Yes	-	Yes
12N/21W-31R1	0.24 mile west of Section Line, 50 feet north of Section Line 150 feet east of Section Line.	Parks Bros.	-	Irr.	480	16	550-600		-	-	Yes
12N/21W-33R1	60 feet east of Section Line Road, 75 feet north of Section Line Road.	Parks Bros.	1949	Irr.	458	16-796'	796		Yes	Yes	Yes
12N/22W-35R1	50 feet north of Section Line fence, 50 feet west of Section Line Road.	Maricopa Farms	Dec. 1946	Irr.	495	16-12	1736		Yes	-	Yes
MD&M											
25S/24E-27R1	100 feet west of Magnolia Avenue, 200 feet north of Pond Road, 15 feet northeast of domestic pump and pressure tank.	G. Fiarini	-	Irr.	262	18	155		-	Yes	Yes
25S/26E-16Q1	0.50 mile south of Section Line (Porterville Highway) 20 feet south of half Section Line, 100 feet west of Section Line (Wallace Avenue).	M. Caratan	Mar. 1941	Irr. (unused)	416	12	684		Yes	-	Yes
25S/26E-1R1		Mid-State Horticulture Co.	-	Irr.	-	-	1371		-	-	Yes
26S/24E-3R1	60 feet west of Section Line (Magnolia Avenue) 75 feet north of Section Line (Elmo Highway).	Robert Heitzig	Dec. 1951	Irr.	274	16-14	821		Yes	-	Yes
26S/27E-9Q1		Nelson G. Smith	-	Stock	-	-	-		-	-	Yes
27S/23E-27J1	35 feet south of half Section Line Road, 60 feet west of Section Line (Rowlec Road).	Robert Neumand	1937	Irr.	286	14-505'	505		Yes	Yes	Yes
27S/24E-5R1	350 feet north of Highway 466, 125 feet west of Schofield Avenue.	Barling Bros.	May 1950	Irr.	-	16-740'	740		Yes	-	Yes
27S/24E-31Q1	20 feet north of half Section Line, 40 feet east of Section Line.	Obie Hawkins	-	Irr.	292	16	448		Yes	-	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)
b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		KERN COUNTY (5-22f) (Cont.)									
27S/25E-5R1	100 feet north of Section Line (Highway 466), 50 feet west of Section Line; 40 feet east of east end of earth reservoir.	Kern County Land Co.		Irr	355		753		Yes		Yes
27S/26E-27R1	75 feet west of Section Line Road; 0.24 mile north of Section Line Road; 40 feet south of quarter Section Line Road.	Charles West			506		802		Yes		Yes
27S/27E-29J1		Mrs. Ethel West	1952	Irr		12	615				Yes
28S/22E-36N1	0.15 mile northwest along west side of lateral H2, from 7th Standard Road (Section Line), 0.12 mile north of Section Line (7th Standard Road).	Houchin		Dom Irr	250	16	304				Yes
28S/25E-25P1	0.09 mile west of Half Section Line (Powerline), 50 feet north of Section Line Road.	Crawford	Nov. 1946	Irr	264	16	277		Yes	Yes	Yes
28S/25E-17L1	0.55 mile west of Poplar Avenue, 180 feet south of Los Angeles Avenue.	W. Isaac	Oct. 1946	Dom Irr	326	12	200		Yes	Yes	Yes
28S/26E-11A1	40 feet south of Section Line Road; 40 feet west of Section Line Road.	S. A. Camp		Irr	480		940		Yes	Yes	Yes
28S/26E-30A1	75 feet west of Section Line Road; 50 feet south of Section Line Road; 30 feet north of earth reservoir.	Kern County Land Co.	Oct. 1951	Irr	354	16	608		Yes	Yes	Yes
29S/24E-4D1	0.2 mile south of 7th Standard Road, 280 feet east of Section Line.	Tracy Ranch	July 1951	Dom	275	8	120		Yes	Yes	Yes
29S/25E-3M1	0.25 mile east of Mayer Road; 250 feet south of Half Section Line; 30 feet west of Quarter Section line.	W. Hale		Irr		12	196				Yes
29S/25E-10N1	50 feet east of Mayer Avenue 0.25 mile north of Sullivan Avenue.	R. Curtis	Mar. 1951	Irr		16	255		Yes		Yes
30S/27E-21D1	350 feet south of Section Line, 0.14 mile east of Section Line.	Kern County Land Co.	Nov. 1950	Dom Stk	370	30-16 412'	412		Yes		Yes
30S/27E-31R1	0.25 mile east of Green Road; 0.23 mile north of Taft Highway, 20 feet east of Quarter Section Line.	Jack Rossi	Sept.1946	Irr	339	14	262		Yes	Yes	Yes
31S/24E-28B1	0.23 mile south of Taft Highway, 75 feet south of Section Line.	Carlos Rey			403	16	402		Yes	Yes	Yes
31S/29E-17E1	0.27 mile south of Buena Vista Road; 0.22 mile east of Vineland Road.	E. Yaksitch	Nov. 1946	Irr	410	12	401		Yes	Yes	Yes
32S/27E-6D1	0.15 mile east of Section Line Road, 0.85 mile west of Old River Road, 30 feet south of an east-west road.	Los Angeles Athletic Club	May 1925	Irr	290	12	982		Yes		Yes
32S/27E-16R1	75 feet north of Section Line Road, 30 feet west of Section Line Road, 15 feet west of Wedge Road.	Kern County Land Co.	Sept.1948	Dom	281	12	346		Yes		Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
MDB&M		KERN COUNTY (5-22f) (Cont.)									
32S/29E-11R1	250 feet west of Tejon Road, 45 feet north of Herring Road.	C. B. Dickey		Irr	457		810		Yes		Yes
32S/29E-16R1	220 feet north of Section Line, 50 feet west of Section Line.	C. B. Dickey	May 1951		468	16-12	1000			Yes	Yes
MDB&M		KERN COUNTY-DEVILS DEN OIL FIELD AREA (5-22f)									
25S/18E-2N2	1.75 mile west of junction of State Highway 33 and Lemoore Road, and 0.2 mile north.	K. K. Ranch		Irr	461	36				Yes	Yes
25S/18E-3D1	2.9 miles west of junction State Highway 33 and Lemoore Road, and 0.8 mile north.	K. K. Ranch		Irr	610	16				Yes	Yes
25S/18E-3E1	2.9 miles west of junction State Highway 33 and Lemoore Road, and 0.6 mile north.	K. K. Ranch		Irr							Yes
25S/19E-6D1	On east side of Lemoore Road 1.0 mile north of junction of State Highway 33 and Lemoore Road.	K. K. Ranch		Dom	505	14				Yes	Yes
25S/19E-6D2	On east side of Lemoore Road 0.8 mile north of junction of State Highway 33 and Lemoore Road.	K. K. Ranch		Irr	506						Yes
25S/19E-6N1	Behind Pacific Gas & Electric substation at Devils Den.	K. K. Ranch		Irr	506						Yes
25S/19E-6P1	1300 feet north and 60 feet west of south quarter corner section 6, 20 feet to ditch.	K. K. Ranch		Irr	506.0		1200				Yes
25S/19E-7M1	500 feet east of State Highway 33 and 0.7 mile south of junction of State Highway 33 and Lemoore Road.	K. K. Ranch		Irr	498	16				Yes	Yes
25S/19E-7P1	0.45 mile east of State Highway 33 and 1.05 mile south of junction of State Highway 33 and Lemoore Road.	K. K. Ranch		Irr	491	16				Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		LOWER MOJAVE RIVER VALLEY (6-40)									
9N/1E-1M1	0.2 mile west of railroad station; 0.1 mile south of Highway 91, Yermo.	Union Pacific Railroad		Dom Ind					No	No	Yes
9N/1E-14M1	1.9 mile east of Daggett, along Santa Fe road 0.8 mile north of Santa Fe road, Daggett.	California Electric Power Co.		Irr					No	No	Yes
9N/1E-15K1	0.5 mile east of Union Pacific railroad spur 0.85 mile north of Santa Fe road northeast of Daggett.	California Electric Power Co.		Irr					No	No	Yes
9N/1E-15N1	Cool water ranch near Daggett 60 feet east of house.	Grey Phelps		Dom		10			No	No	Yes
9N/4E-30R1	660 feet north and 100 feet east of southwest corner of section.	Thomas Ellsworth		Dom					No	No	Yes
9N/1W-4G1	2 miles east of Barstow off Hwy. 91; 1 mile south of Highway on Soap Mine Road, Barstow.	Dr. Roos		Dom					No	No	No
9N/1W-5J2	0.4 mile north of U. S. 66 and Riverside Drive intersection 200 feet east of Riverside Drive.	Southern California Water Co.	12-30-52	Mun		8	208	70-208	Yes	No	Yes
9N/1W-9G1	0.75 mile east of Riverside Drive and 120 feet north of Highway 66 east of Barstow, 2.5 miles	J. B. Price	May, 1948	Dom	2067	8	62			Yes	Yes
9N/1W-10D1 M91A	1.5 mile south of Highway U. S. 91 on Soap Mine Road. 4 miles northeast of Barstow.	Robert Hettick	Sept. 1944	Stk Dom Irr	2046	12	132			Yes	Yes
9N/2W-1F1	0.8 mile west of Barstow at north end of Bradshaw Street 70 feet north of railroad tracks.	Southern California Water Co.	Apr. 1947	Mun		14	174		No	No	Yes
9N/2W-1F2	0.8 mile west of Center of Baretow 200 feet east of Santa Fe crossing and 120 feet north of railroad tracks.	Southern California Water Co.	1945	Mun		14	170			No	Yes
10N/2E-31R1	200 feet north of Highway U. S. 91 at inspection station 1 mile east of Yermo.	Yermo Inspection Station	1930	Dom		10			No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		COACHELLA VALLEY-LOWER COACHELLA AREA(7-21)									
5S/7E-16K1	2.65 miles northwest of Indio, 0.5 mile south of Highway 99 300 feet west of irrigation canal.	Lester Robereon	10-30-51	Dom		6	225	169-225	Yes	No	Yes
5S/7E-22K1	1.5 mile west of Indio, 1.3 mile west of intersection Tackson Avenue and Highway 99.	Z. E. Zalady	8-30-50	Dom		6	200	144-200	Yes	No	Yes
5S/7E-33C1	2.5 miles west of Indio 0.27 mile south and 5.0 miles west of intersection of Madison Avenue and Avenue 48.	Joe N. Ramirez and Sons		Dom Irr		10	339	144-338	Yes	No	Yes
5S/8E-31D1	0.15 mile south and 0.01 mile east of Van Buren Avenue and Highway 60.	Mitchell Land and Improvement Co.	8-12-50	Dom		6	156-300		Yes	No	Yes
5S/8E-33N1	3 miles southeast of Indio, 1.1 mil east of Highway 111 and 264 feet north of Avenue 58.	F. M. Holm	3-19-51	Dom		6	148	108-148	Yes	No	Yes
6S/7E-25E1	0.27 mile south and 0.5 mile east of intersection of Van Buren Avenue and Avenue 54.	Gifford Phillips	2-14-51	Dom		8	300	138-178, 242-300	Yes	No	Yes
6S/8E-7P1	0.03 mile north and 0.4 mile east of intersection of Van Buren Avenue and Avenue 54.	M. R. Shepard	7-7-50	Dom		6	150	130-150	Yes	No	Yes
6S/8E-10A3	2.25 mile east of Highway 111, 500 south of Avenue 52, 100 feet west of Fillmore Avenue.	E. H. McCain		Dom Irr		6	480		No	No	Yes.
6S/8E-27H1	0.7 mile north and 0.99 mile east of intersection of Polk and Avenue 60.	W. C. and Joe E. Stroube	6-26-51	Dom		6	700	412-552, 640-700	Yes	No	Yes
6S/9E-30C1	0.5 mile east and 0.01 mile south of intersection of Buchanan Street and 58th Avenue.	Nazernig Karahadian	7-21-50	Dom Irr		6	527	300-420	Yes	No	Yes
7S/8E-22M1	2.8 miles southeast of Vendell's Corner on Highway U. S. 99, 0.3 mile north of Polk Street and 80 feet east of Polk Street	Vessey Brothers	Dec. 1950	Dom		6	348			No	Yes
7S/9E-16K1	0.74 mile east and 0.01 mile south of intersection of National Avenue and Johnson Street.	C. Charles Crockett	10-20-52	Dom Irr		8	685		Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S.Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		EAST COASTAL PLAIN PRESSURE AREA (8-1.01)									
5S/11W-21M3 577F	50 feet east of Bolsa Chica Street and 0.39 mile north of Wintersburg Avenue.	Mrs. Olive Mason	1935	Dom Irr	18			203-213, 225-228	Yes	No	Yes
5S/11W-21N2	270 feet north of Wintersburg Avenue and 300 feet east of Bolsa Chica.	Anderson Mutual Water Co.		Dom						No	Yes
5S/11W-25R2 C-990-O	150 feet west of Cannery Street and 0.24 mile north of Talbert Avenue.	Harry C. Fulton	Prior to 1914	Dom		7	145		No	No	Yes
5S/11W-26F4	200 yards north of Slater Avenue and 100 feet west of Gothard Street.	Oscar Sticklen	1944	Dom		6	162	142-162	No	No	Yes
5S/11W-26M1 599-D C-998H	0.17 mile south of Slater Avenue and 300 feet east of Goldenwest Street.	Southern California Water Co.	Feb. 1931	Mun			282	60-85, 175-180	Yes	No	Yes
5S/11W-27H4	500 feet north of Slater and 125 feet west of Goldenwest.	W. S. Tubach	3-10-31	Dom	6	4	91			Yes	Yes
5S/11W-29C1 558 C-995H	50 feet north of Los Patos Avenue and 150 feet west of Algonquin Street; easterly of two wells.	Sunset Land and Water Co.		Mun	62	6	641	333-357, 348-416	Yes	Yes	Yes
5S/11W-34F3	0.26 mile west of Edwards and 0.74 mile north of Garfield between Bolsa 1 and Bolsa 2A oil wells.	Signal Oil and Gas Co.	4-17-48	Ind			773	464-773		No	Yes
5S/11W-36B2 14429-D C-999X	0.58 mile east of Huntington Beach Blvd. and 60 feet south of Talbert Avenue, Orange.	Joseph J. Coureges	1921	Dom			138		Yes	No	Yes
5S/11W-36P1 13211-D C-1257X	0.4 mile east of Huntington Beach Blvd. and 0.07 mile north of Garfield Avenue.	Ivan Harper	Aug. 1930	Dom Irr	57		148		Yes	No	Yes
5S/12W-12C1 514-A C-910T	0.45 mile southwest along Westminister Avenue from Los Alamitos Blvd. 750 feet west of Westminister Avenue.	I. W. Hallman Ranch		Dom Stk Irr	13	12	705	417-473	Yes	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		EAST COASTAL PLAIN PRESSURE AREA (8-1.01) (Cont.)									
6S/10W-6L2 13231 C-1257	200 feet west of Bushard Street and 0.5 mile south of Garfield Avenue.	H. J. Lamb	Prior to 1919	Dom	12	7	150		No	Yes	Yes
6S/10W-7G1 13233H C-1266V	250 feet east of Bushard Street and 0.21 mile north of Indianapolis Avenue.	Alban Holtz		Dom			112		No	No	Yes
6S/10W-8D9 13242F C-1262A	0.10 mile south of Adams and 80 feet east of Wright, Costa Mesa.	City of Newport Beach	July,1947	Mun			158	78-116		No	Yes
6S/11W-3R2	0.25 mile southwest of Mansion Avenue along 23rd. Street and 0.30 mile south of Mansion Avenue and 300 feet west of Golden West Street extended.	R. M. Marshall Huntington Beach Golf Course	1950	Irr Dom		8	279		No	No	Yes
6S/11W-12F3 13223F C-1260K	500 feet north of Indianapolis Avenue and 0.52 mile east of Huntington Beach Blvd.	F. E. Farnsworth	1924	Irr Stk	12		161		Yes	No	Yes
6S/11W-12Q1 1260P 13223G	0.23 mile north of Atlanta Avenue and 0.62 mile east of Huntington Beach Blvd.	Surfland Oil Co.		Obs	5		155	129-150	No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), Livestock (Stk), and Observation (Obs)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBBM		CHINO BASIN(8-2.01)									
1S/5W-7N1 D-1062a 17852	100 feet south and 75 feet west of intersection of Santa Fe railroad and Oleander Avenue, Fontana.	Fontana Union Water Co.	1931	Dom Irr			812	424-660; 680-782	No	Yes	Yes
1S/6W-29R1 D-1029b	200 feet west of Etiwanda Avenue and 0.75 mile north of Marley Avenue.	S and S Ranch		Irr Dom					No	No	Yes
1S/7W-28R1 D-1005a 17685b	400 feet south of intersection of Highway 60 and Corona Avenue and 50 feet east of Corona (Baker) Avenue.	Peach Park Water Co.	3-27-28	Irr Dom		16	351		Yes	Yes	Yes
1S/7W-34M1 D-1007a 17685	125 feet east of Vineyard Avenue and 100 feet south of Francis Avenue.	Wildor and Camel	Prior to 1929	Irr Dom		10	326		No	No	Yes
2S/7W-10M1 D-911 17698	90 feet south of Chino Avenue and 0.12 mile east of Vineyard Avenue, east of Chino.	P. J. Crevolin		Dom Irr			375		No	No	Yes
2S/7W-15A1 D-910c 17709A	0.55 mile south of Chino Avenue and 0.2 mile west of Archibald Avenue.	Pietro and Domenico Enrico	1929	Dom		8	436	94-424	Yes	No	Yes
2S/7W-21L1 D-904b	350 feet south of Merril Avenue and 0.50 mile east of Grove 40 feet west of Walker Avenue.	C. T. Merril		Dom Irr	657	14	207		Yes	Yes	Yes
2S/7W-23E1 D-916 16802	120 feet east of Archibald Avenue and 1267 feet north of Merril Avenue.	A. Omlin		Dom		7	104		No	No	Yes
2S/7W-27A1 909-D	230 feet west of Archibald Avenue and 10 feet south of	Luginbill and Imbach		Dom	642		310		No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b US Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA
1957

State well number and other number	Location	Owner	Date completed	Use [o]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		BUNKER HILL BASIN (8-2.06)									
1S/3W-8M1	600 feet south of main runway, 300 feet east of section line Norton Air Force Base, San Bernardino.	Norton Air Force Base		Dom						No	Yes
1S/3W-9E2	400 feet east of Alabama Street and 175 feet north of road into Rock Company, San Bernardino.	Tri-City Rock Co.	Fall 1954	Ind Dom		14	400			No	Yes
1S/3W-16A1 2663 E-113	30 feet west and 30 feet north of the north end of Texas Street at the Santa Ana River southeast of San Bernardino.	Cook Orchards	Deepened in 1954	Irr			400			Yes	Yes
1S/4W-13F3 18041G 466	0.22 mile east of Tippecanoe, 200 feet north of Central Avenue.	Mesbur Realty Co.	1926	Dom	1060	12	123	102-120		No	Yes
1S/4W-13G1 46-1	2500 feet east of Tippicanoe and 100 feet south of Central Avenue projected.	Gage Canal Co.	1946	Irr	1063	24	350			No	Yes
1S/4W-13L1 467	1000 feet east of Tippecanoe and 1300 feet north of San Bernardino Avenue.	Gage Canal Co.	1890	Dom Irr		10	300				Yes
1N/4W-29E3 E-4c	0.6 mile north of Highland Avenue and 100 feet east of California Avenue.	Delman Water Co.	1942	Dom		16	400		Yes	No	Yes
1N/4W-29F1 #4	0.55 mile north of Highland Avenue and 0.5 mile east of California Avenue.	Delman Water Co.		Mun		16	451	240-340, 418-440		No	Yes

o Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		SAN LUIS REY VALLEY (9-7)									
11S/4W-4N1	1.55 miles north from Miesian San Luis Rey along Camp Pendleton road on east side of dirt road.	George Nagata	8-19-52	Irr Dom		14	131	104-131	Yes	No	Yes
11S/4W-5K1	1 mile north of Mission San Luis Rey north side of Pendleton Road east well of two.	Mrs. K. Johnson	3-25-53	Irr Dom		14	207	169-207	Yes	No	Yes
11S/4W-5R1	1 mile from Mission San Luis Rey, 600 feet south of Pendelton road.	Stokes Bros.	5-1-52	Irr			132	100-130	Yes	No	Yes
11S/4W-8H1	1050 feet east of county road, running north from San Luis Rey, 45 feet south of private road.	J. S. Alverado		Irr Dom		12	121			No	Yes
11S/4W-8J1	55 feet north of Highway 76 and 50 feet east of road to Academy of the Little Flower.	Academy of the Little Flower	Aug. 1951	Dom Irr		16				No	Yes
11S/4W-8N1	1300 feet southwest of intersection of Highway 76 with Camp Pendleton road and 87 feet south of Highway 76.	Clarence Mishizu	Mar. 1950	Dom Irr		16	180		No	No	Yes
11S/4W-8R2	270 feet east on Highway 76 after intersection with Camp Pendleton road, 385 feet south of Highway 76, San Luis Rey.	L. O. Ivey		Dom						No	Yes
11S/4W-18C1	2900 feet northeast along Highway 79 from pumping plant 1760 feet northwest along private road.	S. Davies	1937	Irr Dom		14	134			No	Yes
11S/5W-13L1	400 feet south of San Luis Rey River, 2100 feet northwest of Highway 76.	Earl O. Amsler		Dom Irr					No	No	Yes
11S/5W-13Q1	1220 feet northwest along private road from Oceanside-Pala Hwy. at city of Oceanside Booster Plant, 900 feet northeast of road.	City of Oceanside	1936	Mun		18	152		No	No	Yes
11S/5W-23E1	In San Luis Rey River Channel 250 feet north of mouth of Lawrence Canyon.	Walter Johnson	1948	Ind		14	110		No	No	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

WELL DATA

1957

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		EL CAJON VALLEY (9-16)									
15S/1E-31R1	220 feet east of Highway 80 and 0.16 mile north of Flume Drive northeast of El Cajon.	R. G. Alexander	1948	Dom Irr		8	112		No	No	Yes
15S/1W-34R3	150 feet west of Magnolia Avenue and 0.32 mile north of First Avenue north of El Cajon.	G. G. Snyder	Aug. 1949	Dom Irr		36	54		No	No	Yes
16S/1W-1H4	0.10 mile east of Bostonia Street and 0.22 mile north of Broadway, Bostonia.	Rhodes	1946	Dom		36	106		No	No	Yes
16S/1W-2K6	250 feet south of Boradway and 0.28 mile west of First Avenue north of El Cajon.	Bob Gilb	1920	Dom		72	50		No	Yes	Yes
16S/1W-3E1	200 feet west of Cuyamaca Street and 0.38 mile north of Broadway.	Ed. Fletcher Co.	1952	Mun		8	847		No	Yes	Yes
16S/1W-3N1 # 3	0.81 mile north of Main Street and 300 feet east of Pierce Street west of El Cajon.	Ed. Fletcher Co.	May 1951	Mun		8	532		Yes	Yes	Yes
16S/1W-3Q1	950 feet east of Johnson Avenue and 0.29 mile south of Broadway west of El Cajon.	E. S. Clark	1915	Dom Irr		72	101		No	No	Yes
16S/1W-10D1 # 2	0.38 mile north of Main Street and 300 feet east of Pierce Street west of El Cajon.	Ed. Fletcher Co.	1946	Mun		9	521		Yes	Yes	Yes
16S/1W-10E2 # 1	120 feet north of Main Street, and 0.40 mile west of Johnson Avenue west of El Cajon.	Ed. Fletcher Co.	2-9-46	Mun		9	331		Yes	Yes	Yes
16S/1W-11P4	50 feet north of Camden Avenue and 141 feet east of Taft Avenue El Cajon.	J. M. Conaway	1949	Irr		24	50		No	No	Yes
16S/1W-12J4	120 feet north of Lexington Avenue and 0.13 mile west of Third Street.	Bud Robinson		Dom		42	72		No	Yes	Yes
16S/1W-15K2	40 feet south of Chase Avenue and 0.28 mile west of Magnolia Avenue.	R. S. Embleton	Sept. 1950	Dom			24			Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U.S. Geological Survey datum (Feet above mean sea level unless otherwise indicated)

State well number and other number	Location	Owner	Date completed	Use [a]	Ground surface elevation [b]	Size of casing in inches	Total depth in feet	Intervals of perforated casing in feet	Data available		
									Log	Water levels	Analyses
SBB&M		TIA JUANA BASIN(9-19)									
18S/2S-32H1 140	0.25 mile south of Sunset and 0.12 mile east of 15th Street extended.	California Water and Telephone Co.	Prior to 1919	Test	11.5	10	28	None Open Bottom	Yes	Yes	Yes
18S/2W-32P2 157	0.04 mile south of Sunset Street and 1.1 mile west of 19th Street.	State of California Dept. of Veterans Affairs	Prior to 1-22-21	Irr	10	12 3	37		Yes	Yes	Yes
18S/2W-32P4 1947A	0.03 mile east of west end of Sunset Ave. (Banana).	California Water and Telephone Co.	8-28-47	Test		8	100	85-100	Yes	Yes	Yes
18S/2W-33K4 123D	81 feet east and 25 feet north of intersection of Sunset Street and 19th Street.	James Jackson		Irr		12			Yes	No	Yes
18S/2W-35L1 20B	Northeast corner of intersection of Gate 2 (Dairy Mart) Road and U. S. Highway 101.	Henry Schaffner		Irr					No	No	Yes
19S/2W-1E8	0.1 mile south of Bolton Hall Road on line of Cottonwood Drive produced.	San Ysidro Irrigation District		Mun						No	Yes
19S/2W-2E1 31D	West side Gate 2 (Dairy Mart) Road and 0.35 mile south of Tia Juana River.	Grey		Irr					No	No	Yes
19S/2W-3A1 31C	0.25 mile west of Gate 2 (Dairy Mart) Road and 0.25 mile south of Tia Juana River.	Aballo and Wright		Stk Irr					No	No	Yes
19S/2W-4A5 111C-5	720 feet west of National Avenue and 0.32 mile south of Sunset Street (Banana).	California Water and Telephone Co.	1919	Mun	24.0	12	78		Yes	Yes	Yes
19S/2W-5C6 1947C	0.5 mile south of Sunset (Banana) Street and 1.22 mile west of 19th Street.	California Water and Telephone Co.	Oct. 1947	Test	8.5	8	100		No	Yes	Yes
19S/2W-5G1 145G	0.38 mile south of Sunset (Banana) and 0.75 mile west of 19th Street.	Knox Dairy Farm		Irr					No	No	Yes
19S/2W-5L2 147D	15 feet north of Monument Road on the eastern boundary of border field (extended northerly).	California Water and Telephone Co.	9-30-47	Test	8.6	8	96		Yes	Yes	Yes

a Domestic (Dom), Municipal (Mun), Irrigation (Irr), Industrial (Ind), and Livestock (Stk)

b U S Geological Survey datum (Feet above mean sea level unless otherwise indicated)

APPENDIX C

WATER QUALITY

Laboratory Methods and Procedures

Analytical methods used in determination of various constituents reported in the following tables conform, in general, to those presented in "Standard Methods for the Examination of Water and Sewage," 10th Edition, 1955, a joint publication of the American Public Health Association, the American Water Works Association, and the Federation of Sewage and Industrial Wastes Associations. For certain specific analyses, the methods described in "Methods of Water Analyses," 1956, a United States Geological Survey manual now in preparation, have been used.

Laboratory analyses of the water samples are performed by the Water Quality Branch of the United States Geological Survey; by the Department of Water Resources laboratories located in Sacramento, San Bernardino, and Riverside; or by various other public or private laboratories, each as indicated in the right hand column of the tables.

The following tabulation indicates the tests made and the constituents usually analyzed in the ground water quality monitoring program.

Constituent	Analysis	
	Standard mineral	Partial mineral
Specific conductance	X	X
pH	X	X
Total dissolved solids	X	
Per cent sodium	X	
Hardness	X	X
Temperature	X	X
Calcium	X	
Magnesium	X	
Sodium	X	X
Potassium	X	
Carbonate	X	
Bicarbonate	X	
Sulfate	X	
Chloride	X	X
Nitrate	X	
Fluoride	X	
Boron	X	X
Silica	X	

Water Quality Criteria

Presented herein are general criteria and limiting values presently used by the Department of Water Resources in evaluating and classifying water quality. These values should be considered only as guides and indicators and not as absolute limitations.

Criteria for Drinking Water

Water that is used for drinking and culinary purposes must be clear, colorless, odorless, pleasant to the taste, and must not endanger the lives or health of human beings. These general requirements pertain to the water as it is finally delivered to the consumer; prior treatment may be necessary in order to comply with these requirements.

Chapter 7 of the California Health and Safety Code contains laws and standards relating to domestic water supply. Section 4010.5 of this code refers to the drinking water standards promulgated by the United States Public Health Service for water used on interstate carriers. These criteria have been adopted by the State of California. They are set forth in detail in United States Public Health Report, Volume 61, No. 11, March 15, 1946.

According to Section 4.2 of the above-named report, chemical substances in drinking water supplies, either natural or treated, should not exceed the concentrations shown in Table C-1.

TABLE C-1

LIMITING CONCENTRATIONS OF
MINERAL CONSTITUENTS IN DRINKING WATER

United States Public Health Service
Drinking Water Standards, 1946

Constituent	ppm
Mandatory	
Fluoride (F)	1.5
Lead (Pb)	0.1
Selenium (Se)	0.05
Hexavalent chromium (Cr^6)	0.05
Arsenic (As)	0.05
Nonmandatory but Recommended Values	
Iron (Fe) and manganese (Mn) together	0.3
Magnesium (Mg)	125
Chloride (Cl)	250
Sulfate (SO_4)	250
Copper (Cu)	3.0
Zinc (Zn)	15
Phenolic compounds in terms of phenol	0.001
Dissolved solids, desirable	500
Dissolved solids, permitted	1000

Interim standards for certain mineral constituents have recently been adopted by the California State Board of Public Health. Based on these standards, temporary permits may be issued for drinking water supplies failing to meet the United States Public Health Service Drinking Water Standards, provided the mineral constituents in the following table are not exceeded.

UPPER LIMITS OF TOTAL SOLIDS AND SELECTED MINERALS IN DRINKING WATER AS DELIVERED TO THE CONSUMER

	Permit	Temporary permit
Total solids	500 (1000)*	1500 ppm
Sulfates (SO_4)	250 (500)*	600 ppm
Chlorides (Cl)	250 (500)*	600 ppm
Magnesium (Mg)	125 (125)	150 ppm

* Numbers in parentheses are maximum permissible, to be used only where no other more suitable waters are available in sufficient quantity for use in the system.

The California State Board of Health recently has defined the following maximum safe amounts of fluoride in drinking water in relation to mean annual temperature:

Mean annual temperature in °F	Maximum mean monthly fluoride ion concentration in ppm
50	1.5
60	1.0
70 - above	0.7

Other organic or mineral substances may be limited in concentration if their presence in water renders it hazardous as determined by state or local health authorities.

The relationship of infant methemoglobinemia (a reduction of oxygen content in the blood, constituting a form of asphyxia) to nitrates in the water supply has led to limitation of nitrates in drinking water. The California State Department of Public Health has recommended a tentative limit of 10 ppm nitrate nitrogen (44 ppm nitrates) for domestic waters. Water containing higher concentrations of nitrates may be considered to be of questionable quality for domestic and municipal use.

An additional factor with which users are concerned is the hardness of water. Hardness is principally due to calcium and magnesium and is

generally evidenced to the consumer by inability to develop suds when using soap. In general domestic use, hardness can result in increased soap consumption and excessive repairs to plumbing. The following classification of water according to hardness has been suggested by the United States Geological Survey:

Range of hardness in ppm	Relative classification
0 - 55	Soft
56 - 100	Slightly hard
101 - 200	Moderately hard
Greater than 200	Very hard

Criteria for Irrigation Water

The following criteria for mineral quality of irrigation water have been developed at the University of California at Davis and at the United States Department of Agriculture Regional Salinity Laboratory at Riverside. Because of diverse climatological conditions and variations in crops and soils in California, only general limits of quality for irrigation waters can be suggested. The Department uses the three broad classifications of irrigation waters listed in Table C-2.

TABLE C-2

QUALITATIVE CLASSIFICATION OF IRRIGATION WATERS

Chemical properties	Class 1 Excellent to good (Suitable for most plants under any conditions of soil and climate)	Class 2 Good to injurious (Possibly harmful for some crops under certain soil conditions)	Class 3 Injurious to unsatisfactory (Harmful to most crops and unsatisfactory for all but the most tolerant)
Total dissolved solids			
In ppm	Less than 700	700 - 2,000	More than 2,000
In conductance, $EC \times 10^6$	Less than 1,000	1,000 - 3,000	More than 3,000
Chloride ion concentration			
In milliequivalents per liter	Less than 5	5 - 10	More than 10
In ppm	Less than 175	175 - 350	More than 350
Sodium in per cent of base constituents	Less than 60	60 - 75	More than 75
Boron, in ppm	Less than 0.5	0.5 - 2.0	More than 2.0

Criteria for Industrial Uses

Quality criteria for the diversified uses of water in industry range from exacting requirements for makeup water used in high pressure boilers to minimum requirements for water for washdown and ore quenching.

Industrial use of water includes utilization for food processing. Except for certain canning operations, water used in food processing must at least conform to quality requirements for drinking water supplies. The requirements of some food processing industries, however, are more stringent than those contained in the drinking water standards of the United States Public Health Service.

Because of the large number of industrial uses of water with widely varied quality requirements, it is difficult to establish more than broad criteria of quality. Therefore, these requirements are expressed, where possible, for groups of related industries rather than for individual plants. The general quality requirements of several single industries and for representative major groups of industrial uses are listed in Table C-3.

WATER QUALITY TOLERANCE FOR INDUSTRIAL USES[a]

Allowable limits in parts per million

Use	Turbidity	Color	Hardness as $CaCO_3$	Iron[c] as Fe	Manganese as Mn	Total solids	Alkalinity as $CaCO_3$	Odor, taste	Hydrogen sulfide	Miscellaneous Requirements: Health	Miscellaneous Requirements: Other
Air conditioning				0.5	0.5			Low	1		No corrosiveness, slime formation
Baking	10	10		0.2	0.2			Low	0.2	Potable[b]	
Brewing											
Light Beer	10			0.1	0.1	500	75	Low	0.2	Potable[b]	NaCl less than 275 ppm (pH 6.5-7.0).
Dark Beer	10			0.1	0.1	1,000	150	Low	0.2	Potable[b]	NaCl less than 275 ppm (pH 7.0 or more)
Canning											
Legumes	10		25-75	0.2	0.2			Low	1	Potable[b]	
General	10			0.2	0.2			Low	1	Potable[b]	
Carbonated beverages	2	10	250	0.2	0.2	850	50-100	Low	0.2	Potable[b]	Organic color plus oxygen consumed less than 10 ppm.
Confectionery				0.2	0.2	100		Low	0.2	Potable[b]	pH above 7.0 for hard candy.
Cooling	50		50	0.5	0.5				5		No corrosiveness, slime formation.
Food: General	10			0.2	0.2			Low		Potable[b]	
Ice	5	5		0.2	0.2			Low		Potable[b]	SiO_2 less than 10 ppm.
Laundering			50	0.2	0.2						
Plastics, clear,											
Uncolored	2	2		0.02	0.02	200					
Paper and pulp:											
Groundwood	50	20	180	1.0	0.5						No grit, corrosiveness.
Draft pulp	25	15	100	0.2	0.1	300					
Soda and sulfide	15	10	100	0.1	0.05	200					
High-grade light papers	5	5	50	0.1	0.05	200					
Rayon (viscose):											
Pulp production	5	5	8	0.05	0.03	100	total 50; hydroxide 8				Al_2O_3 less than 8 ppm, SiO_2 less than 25 ppm, Cu less than 5 ppm.
Manufacture	0.3		55	0.0	0.0						pH 7.8 to 8.3
Tanning	20	10-100	50-135	0.2	0.2		total 135; hydroxide 8				
Textiles: General	5	20		0.25	0.25						
Dyeing	5	5-20		0.25	0.25	200					Constant composition. Residual alumina less than 0.5 ppm.
Wool scouring		70		1.0	1.0						
Cotton bandage	5	5		0.2	0.2			Low			

a-Moore, E. W., Progress Report of the Committee on Quality Tolerances of Water for Industrial Uses: Journal New England Water Works Association, Volume 54, Page 271, 1940.
b-Potable water, conforming to U. S. P.H.S. standards, is necessary.
c-Limit given applies to both iron alone and the sum of iron and manganese.

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (No)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm a	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	HB&M					SMITH RIVER PLAIN, (1-1)																	
Arlet Short Domestic Well	16N/1W-2Q1	10-2-57	--	241	7.8	16 / 0.80	12 / 0.98	16 / 0.70	0.7 / 0.02	0 / 0.00	132 / 2.16	0.4 / 0.01	14 / 0.39	1.0 / 0.02	0.1 / 0.01	0.00	39	Fe 0.02	164	28	89	0	USGS
L. L. Early Domestic Well	16N/1W-15C1	12-4-57	--	142	7.1	5.2 / 0.26	8.5 / 0.70	9.4 / 0.41	0.7 / 0.02	0 / 0.00	38 / 0.62	3.8 / 0.08	12 / 0.34	23 / 0.37	0.0 / 0.00	0.00	19	Fe 0.01	101	29	48	17	USGS
Pine Grove School Municipal Well	16N/1W-16D1	9-11-57	--	176	7.4	6.4 / 0.32	12 / 0.97	10 / 0.44	0.6 / 0.02	0 / 0.00	69 / 1.13	1.9 / 0.04	20 / 0.56	1.9 / 0.03	0.0 / 0.00	0.00	28	Fe 0.00	115	25	65	8	USGS
North-Cal Plywood Co. Dom. and Ind. Well	16N/1W-18F1	12-4-57	--	319	7.8	7.2 / 0.36	20 / 1.66	27 / 1.17	0.5 / 0.01	0 / 0.00	128 / 2.10	4.6 / 0.10	36 / 1.02	0.0 / 0.00	0.0 / 0.00	0.02	24	Fe 0.05	182	37	101	0	USGS
Albert Pullen Domestic Well	16N/1W-20A2	12-4-57	--	257	6.7	4.4 / 0.22	14 / 1.12	22 / 0.96	1.0 / 0.03	0. / 0.00	46 / 0.75	12 / 0.25	19 / 0.54	48 / 0.77	0.0 / 0.00	0.05	23	Fe 0.01	166	41	67	29	USGS
J. E. Patterson Domestic Well	16N/1W-20B1	12-4-57	--	206	7.0	3.2 / 0.16	13 / 1.04	19 / 0.83	0.8 / 0.02	0 / 0.00	72 / 1.18	12 / 0.25	16 / 0.45	14 / 0.23	0.0 / 0.00	0.01	27	Fe 0.02	140	40	60	1	USGS
Walter Story Domestic Well	16N/1W-20H1	12-4-57	--	250	7.5	6.4 / 0.32	15 / 1.22	16 / 0.70	0.9 / 0.02	0 / 0.00	43 / 0.70	6.7 / 0.14	33 / 0.93	30 / 0.48	0.0 / 0.00	0.00	19	Fe 0.01	148	31	77	42	USGS
Crescent City Water Co. Municipal Well	16N/1W-20Q1	12-5-57	--	215	7.9	7.6 / 0.38	11 / 0.90	16 / 0.70	1.0 / 0.03	0 / 0.00	58 / 0.95	9.6 / 0.20	26 / 0.73	11 / 0.18	0.0 / 0.00	0.00	17		128	35	64	16	USGS
Del Norte County Infirmary-Dom. Well	16N/1W-21M1	12-4-57	--	179	7.2	4.8 / 0.24	11 / 0.88	14 / 0.61	0.8 / 0.02	0 / 0.00	74 / 1.21	0.0 / 0.00	18 / 0.51	1.2 / 0.02	0.0 / 0.00	0.02	24	Fe 0.10	110	35	56	0	USGS
R. H. Emmerson Irrigation Well	17N/1W-9A1	9-12-57	--	242	8.1	7.2 / 0.36	25 / 2.05	4.9 / 0.21	0.5 / 0.01	0 / 0.00	145 / 2.38	0.0 / 0.00	9.5 / 0.27	1.4 / 0.02	0.0 / 0.00	0.00	34		154	8	121	2	USGS
Paul E. Johnson Irrigation Well	17N/1W-15E1	9-14-57	--	130	7.8	2.4 / 0.12	12 / 0.98	5.0 / 0.22	0.5 / 0.01	0 / 0.00	64 / 1.05	0.6 / 0.01	10 / 0.28	1.5 / 0.02	0.0 / 0.00	0.00	25		89	17	55	3	USGS
Ray W. Struebing Domestic Well	18N/1W-5G1	9-11-57	--	168	6.2	6.8 / 0.34	5.1 / 0.42	15 / 0.65	0.8 / 0.02	0 / 0.00	17 / 0.28	4.8 / 0.10	30 / 0.85	13 / 0.21	0.1 / 0.01	0.00	11		95	45	38	24	USGS
M. J. Sierka Domestic Well	18N/1W-17R1	12-4-57	--	154	7.6	8.4 / 0.42	8.9 / 0.73	9.5 / 0.41	0.5 / 0.01	0 / 0.00	72 / 1.18	1.9 / 0.04	13 / 0.37	0.3 / 0.00	0.0 / 0.00	0.03	29		107	26	57	0	USGS
Arnold Samuelson Irrigation Well	18N/1W-26D1	10-2-57	--	84.0	6.7	2.8 / 0.14	2.7 / 0.22	9.2 / 0.40	0.6 / 0.02	0 / 0.00	26 / 0.43	1.9 / 0.04	7.5 / 0.21	6.5 / 0.10	0.0 / 0.00	0.01	13		57	51	18	0	USGS
Lionel Borough Irrigation Well	18N/1W-35B1	9-13-57	--	77.9	7.0	5.2 / 0.26	2.2 / 0.18	6.5 / 0.28	0.6 / 0.02	0 / 0.00	25 / 0.41	1.0 / 0.02	7.4 / 0.21	5.4 / 0.09	0.0 / 0.00	0.00	17	Fe 0.01	57	38	22	2	USGS

a. Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M								BUTTE VALLEY (1-3)														
L. D. Pareone Irrigation Well	45N/1E-2L1	9-5-57	---	153	8.2	8.0 / 0.40	7.2 / 0.59	13 / 0.57	2.2 / 0.06	0 / 0.00	94 / 1.54	0.6 / 0.01	4.6 / 0.13	0.3 / 0.00	0.0 / 0.00	0.03	45		127	35	50	0	USGS
Albert Beck Irrigation Well	45N/1E-9C2	8-29-57	—	162	8.0	8.8 / 0.44	8.3 / 0.68	14 / 0.61	2.3 / 0.06	0 / 0.00	98 / 1.61	1.9 / 0.04	4.5 / 0.13	0.8 / 0.01	0.2 / 0.01	0.17	32		123	34	56	0	USGS
Kenneth Holbrook Irrigation Well	46N/1E-15D1	9-20-57	--	201	8.0	5.6 / 0.28	4.7 / 0.39	29 / 1.26	7.1 / 0.18	0 / 0.00	117 / 1.92	1.3 / 0.03	7.2 / 0.20	1.0 / 0.02	0.2 / 0.01	0.08	49		163	60	33	0	USGS
French E. Johnson Irrigation Well	47N/1E-29N1	7-17-57	—	329	8.5	15 / 0.75	6.0 / 0.49	49 / 2.13	10 / 0.26	7 / 0.23	177 / 2.90	12 / 0.25	6.2 / 0.17	1.7 / 0.03	0.3 / 0.02	0.09	63		257	59	62	0	USGS
Deloe Mills Irrigation Well	45N/2W-1P1	8-7-57	52	160	8.2	12 / 0.60	5.1 / 0.42	13 / 0.57	3.0 / 0.08	0 / 0.00	96 / 1.57	2.9 / 0.06	0.4 / 0.01	0.9 / 0.01	0.1 / 0.01	0.02	51		135	34	51	0	USGS
Robert Cheyne Irrigation Well	46N/1W-2F1	7-17-57	--	376	8.5	18 / 0.90	14 / 1.16	42 / 1.83	7.3 / 0.19	10 / 0.33	210 / 3.44	5.8 / 0.12	4.8 / 0.14	6.4 / 0.10	0.1 / 0.01	0.03	55		266	45	103	0	USGS
Wm. Osborne Irrigation Well	46N/1W-17G1	8-7-57	58	318	8.7	18 / 0.90	15 / 1.22	30 / 1.30	3.9 / 0.10	12 / 0.40	181 / 2.97	2.9 / 0.06	2.8 / 0.08	0.5 / 0.01	0.1 / 0.01	0.03	47		221	37	106	0	USGS
Butte Valley Irr. Dist. Irr. Well	46N/2W-25R2	8-7-57	54	301	8.5	21 / 1.05	19 / 1.53	13 / 0.57	4.7 / 0.12	6 / 0.20	150 / 2.46	19 / 0.40	1.9 / 0.05	6.6 / 0.11	0.1 / 0.01	0.00	56		221	17	129	0	USGS
Elveno Harrison Irrigation Well	47N/1W-23H1	3-6-57	50	2200	7.9	14 / 0.70	46 / 3.78	474 / 20.62	51 / 1.30	0 / 0.00	1040 / 17.05	286 / 5.95	109 / 3.07	10 / 0.16	0.3 / 0.02	1.5	50		1550	78	224	0	USGS
		8-29-57	—	3830	8.5	45 / 2.25	157 / 12.95	626 / 27.23	88 / 2.25	35 / 1.17	746 / 12.23	979 / 20.38	328 / 9.25	8.3 / 0.13	0.4 / 0.02	1.5	44		2670	61	760	90	USGS
Butte Valley Farms Irrigation Well	47N/1W-34Q1	8-22-57	--	433	8.8	21 / 1.05	18 / 1.51	47 / 2.04	12 / 0.31	15 / 0.50	241 / 3.95	4.2 / 0.09	7.0 / 0.20	6.0 / 0.10	0.1 / 0.01	0.12	46		294	42	128	0	USGS

a. Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by[c]
	MDB&M								SHASTA VALLEY (1-4)														
Big Springs Irrigation Dist. Irrigation Well	43N/5W-2C1	3-7-57	50	245	6.8	14 / 0.70	15 / 1.20	18 / 0.78	2.0 / 0.05	0 / 0.00	142 / 2.33	0.0 / 0.00	11 / 0.31	0.6 / 0.01	0.1 / 0.01	0.25	55		186	29	95	0	USGS
		7-26-57	—	269	8.5	17 / 0.85	13 / 1.11	19 / 0.83	2.3 / 0.06	5 / 0.17	137 / 2.25	4.8 / 0.10	11 / 0.31	1.1 / 0.02	0.0 / 0.00	0.15	22		162	29	98	0	USGS
Dougherty & Son Irrigation Well	43N/6W-21R1	3-12-57	55	457	7.1	62 / 3.09	23 / 1.89	8.2 / 0.36	1.0 / 0.03	0 / 0.00	297 / 4.87	12 / 0.25	3.5 / 0.10	2.8 / 0.05	0.1 / 0.01	0.08	32		291	7	249	5	USGS
		8-13-57	--	445	8.0	58 / 2.89	21 / 1.69	9.4 / 0.41	1.3 / 0.03	0 / 0.00	278 / 4.56	8.6 / 0.18	1.8 / 0.05	5.2 / 0.08	0.0 / 0.00	0.00	35		277	8	229	1	USGS
Jess C. Martin Irrigation Well	44N/4W-6M1	3-12-57	56	552	7.3	56 / 2.79	23 / 1.89	33 / 1.44	2.0 / 0.05	0 / 0.00	309 / 5.06	15 / 0.31	18 / 0.51	11 / 0.18	0.0 / 0.00	1.2	51		362	23	234	0	USGS
		7-20-57	--	528	8.2	40 / 2.00	23 / 1.86	42 / 1.83	2.3 / 0.06	0 / 0.00	285 / 4.67	13 / 0.27	20 / 0.56	11 / 0.18	0.1 / 0.01	1.2	58		351	32	193	0	USGS
S. D. Nelson Irr. and Dom. Well	44N/5W-32F1	3-13-57	51	865	7.5	38 / 1.90	68 / 5.58	69 / 3.00	3.3 / 0.08	0 / 0.00	547 / 8.97	19 / 0.40	34 / 0.96	0.0 / 0.00	0.0 / 0.00	0.61	54		555	28	374	0	USGS
		7-26-57	—	875	8.8	83 / 4.14	41 / 3.38	71 / 3.09	3.5 / 0.09	44 / 1.47	470 / 7.70	23 / 0.48	43 / 1.21	0.1 / 0.00	0.1 / 0.01	0.57	54		594	29	376	0	USGS
Henry Silva Irrigation Well	44N/5W-34H1	3-7-57	56	689	7.3	47 / 2.35	39 / 3.21	52 / 2.26	6.1 / 0.16	0 / 0.00	401 / 6.57	8.6 / 0.18	26 / 0.73	11 / 0.18	0.2 / 0.01	0.54	66		454	28	278	0	USGS
		7-26-57	--	633	8.7	43 / 2.15	33 / 2.73	52 / 2.26	6.2 / 0.16	22 / 0.73	334 / 5.47	7.7 / 0.16	29 / 0.82	9.6 / 0.15	0.0 / 0.00	0.47	66		434	31	244	0	USGS
George Weldon Domestic Well	45N/6W-19E1	3-12-57	54	364	7.4	24 / 1.20	14 / 1.14	38 / 1.65	1.0 / 0.03	0 / 0.00	184 / 3.02	41 / 0.85	1.5 / 0.04	0.0 / 0.00	0.3 / 0.02	0.26	25		236	41	117	0	USGS
		7-20-57	—	371	8.3	26 / 1.30	11 / 0.94	42 / 1.83	1.4 / 0.04	6 / 0.20	172 / 2.82	44 / 0.92	4.5 / 0.13	1.0 / 0.02	0.2 / 0.01	0.26	23		244	45	112	0	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					SCOTT RIVER VALLEY (1-5)																	
Carl W. Black Irrigation Well	42N/9W-2G1	7-31-57	54	439	8.2	51 / 2.54	26 / 2.11	6.7 / 0.29	0.6 / 0.02	0 / 0.00	281 / 4.61	5.2 / 0.11	5.8 / 0.16	8.7 / 0.14	0.0 / 0.00	0.00	33		275	6	233	3	USGS
Carl R. McConnell Irrigation Well	42N/9W-10Q1	7-30-57	70	211	—	20 / 1.00	13 / 1.06	6.3 / 0.27	0.8 / 0.02	3 / 0.10	126 / 2.07	2.9 / 0.06	2.2 / 0.06	2.5 / 0.04	0.0 / 0.00	0.00	38		151	11	103	0	USGS
L. L. Lukee Irrigation Well	43N/9W-24P2	7-31-57	—	353	8.2	27 / 1.35	28 / 2.30	6.0 / 0.26	0.6 / 0.02	0 / 0.00	209 / 3.43	9.2 / 0.19	1.9 / 0.05	15 / 0.24	0.0 / 0.00	0.00	38		229	7	183	12	USGS
O. E. Heinke Dom. and Stk. Well	44N/9W-34R1	3-5-57	45	289	7.1	35 / 1.75	15 / 1.25	5.2 / 0.23	0.5 / 0.01	0 / 0.00	156 / 2.56	11 / 0.23	3.0 / 0.08	19 / 0.31	0.0 / 0.00	0.13	25		191	7	150	22	USGS
		8-8-57	64	298	8.5	36 / 1.80	14 / 1.16	5.8 / 0.25	0.9 / 0.02	7 / 0.23	146 / 2.39	12 / 0.25	3.1 / 0.09	18 / 0.29	0.0 / 0.00	0.00	26		195	8	148	17	USGS

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
						MAD RIVER VALLEY (1-8)																	
	HB&M																						
Lane Portland Lumber Co. Induetrial Well	5N/1E-8J1	2-13-57	62	289	6:9	16 / 0.80	12 / 0.98	27 / 1.17	1.5 / 0.04	0 / 0.00	153 / 2.51	0.5 / 0.01	17 / 0.48	0.0 / 0.00	0.1 / 0.01	0.1	39		188	40	89	0	DWR
		12-4-57	64	305	7.1	17 / 0.85	13 / 1.11	30 / 1.30	1.9 / 0.05	0 / 0.00	164 / 2.69	1.0 / 0.02	21 / 0.59	0.0 / 0.00	0.1 / 0.01	0.32	38		203	39	98	0	USGS
Ace Bulb Farm Dom. and Irr. Well	6N/1W-1H1	2-14-57	61	151	6.8	4.7 / 0.23	5.2 / 0.42	14 / 0.61	0.5 / 0.01	0 / 0.00	29 / 0.48	0.0 / 0.00	19 / 0.54	9.1 / 0.15	0.0 / 0.00	0.00	15		82	48	33	9	DWR
		12-4-57	--	159	7.3	4.8 / 0.24	6.6 / 0.54	15 / 0.65	0.6 / 0.02	0 / 0.00	30 / 0.49	5.8 / 0.12	22 / 0.62	16 / 0.26	0.0 / 0.00	0.00	17		103	45	39	14	USGS
J. M. Vieira Domestic Well	6N/1W-1P1	2-12-57	46	4920	7.5	43 / 2.15	94 / 7.72	842 / 36.63	32 / 0.82	0 / 0.00	105 / 1.72	175 / 3.64	1460 / 41.17	0.6 / 0.01	0.1 / 0.01	0.29	16		2710	77	494	408	DWR
		12-4-57	50	7770	7.6	96 / 4.79	209 / 17.21	1230 / 53.50	48 / 1.23	0 / 0.00	94 / 1.54	315 / 6.56	2520 / 71.06	2.2 / 0.04	0.2 / 0.01	0.56	18		4480	70	1100	1020	USGS
Frank Coleman Irr. and Dom. Well	6N/1E-7M1	2-12-57	44	475	6.7	45 / 2.25	29 / 2.35	13 / 0.57	2.2 / 0.06	0 / 0.00	267 / 4.38	9.2 / 0.19	19 / 0.54	0.4 / 0.01	0.0 / 0.00	0.01	20		269	11	230	11	DWR
		12-4-57	50	517	7.1	47 / 2.35	33 / 2.69	15 / 0.65	2.5 / 0.06	0 / 0.00	288 / 4.72	7.7 / 0.16	25 / 0.70	0.8 / 0.01	0.2 / 0.01	0.33	25		299	11	252	16	USGS
Chester Hunt Irrigation Well	6N/1E-18J1	2-12-57	48	485	6.5	44 / 2.20	27 / 2.24	12 / 0.52	6.0 / 0.15	0 / 0.00	237 / 3.88	27 / 0.56	23 / 0.65	3.0 / 0.05	0.0 / 0.00	0.09	13		272	10	222	28	DWR
		12-4-57	55	459	7.2	47 / 2.35	28 / 2.31	9.2 / 0.40	1.3 / 0.03	0 / 0.00	254 / 4.16	17 / 0.35	16 / 0.45	0.3 / 0.00	0.2 / 0.01	0.33	27		271	8	233	25	USGS
Arcata Plywood Plant Industrial Well	6N/1E-32F1	2-12-57	58	813	7.1	15 / 0.75	11 / 0.87	140 / 6.09	8.7 / 0.22	0 / 0.00	250 / 4.10	0.3 / 0.01	137 / 3.86	1.4 / 0.02	0.3 / 0.02	0.07	29		466	77	81	0	DWR
		12-4-57	60	812	7.2	13 / 0.65	13 / 1.03	141 / 6.13	9.0 / 0.23	0 / 0.00	240 / 3.93	19 / 0.40	132 / 3.72	0.8 / 0.01	0.2 / 0.01	0.75	28		475	76	84	0	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	HR&M					EEL RIVER VALLEY (1-10)																	
Alex Capaul Irrigation Well	2N/1W-4D1	2-14-57	58	444	6.4	62 / 3.09	14 / 1.14	8.6 / 0.37	2.0 / 0.05	0 / 0.00	247 / 4.05	25 / 0.52	5.9 / 0.17	2.7 / 0.04	0.0 / 0.00	0.10	12		253	8	212	9	DWR
Harold Wilson Irrigation Well	2N/1W-7A1	10-3-57	--	305	8.0	18 / 0.90	22 / 1.64	11 / 0.48	1.7 / 0.04	0 / 0.00	172 / 2.82	0.0 / 0.00	15 / 0.42	0.6 / 0.01	0.0 / 0.00	0.09	28		181	15	137	0	USGS
Albert Johnson Irr. and Dom. Well	2N/1W-12D1	10-3-57	--	211	7.9	10 / 0.50	12 / 0.96	15 / 0.65	1.0 / 0.03	0 / 0.00	106 / 1.74	9.6 / 0.20	9.0 / 0.25	0.4 / 0.01	0.0 / 0.00	0.02	28		137	30	73	0	USGS
Charles Anderson Irrigation Well	2N/1W-17G1	10-4-57	--	982	8.1	34 / 1.70	47 / 3.84	98 / 4.26	7.9 / 0.20	0 / 0.00	352 / 5.77	29 / 0.60	137 / 3.86	4.3 / 0.07	0.1 / 0.01	0.33	21		552	43	277	0	USGS
Chris Peterson Dom. and Irr. Well	3N/1W-18D2	2-13-57	50	144	6.5	3.7 / 0.19	5.9 / 0.48	12 / 0.52	1.5 / 0.04	0 / 0.00	33 / 0.54	5.1 / 0.11	18 / 0.51	3.8 / 0.06	0.0 / 0.00	0.00	18		84	42	34	1	DWR
		10-3-57	--	166	7.7	2.8 / 0.14	10 / 0.86	15 / 0.65	0.9 / 0.02	0 / 0.00	67 / 1.10	8.3 / 0.17	14 / 0.39	1.3 / 0.02	0.0 / 0.00	0.09	36		121	39	50	0	USGS
Chester Goble Irrigation Well	3N/1W-29C1	2-14-57	56	745	6.6	46 / 2.30	4.9 / 4.07	32 / 1.39	3.8 / 0.10	0 / 0.00	337 / 5.52	28 / 0.58	63 / 1.78	0.2 / 0.00	0.2 / 0.01	0.18	18		406	18	319	43	DWR
		12-4-57	--	574	8.5	29 / 1.45	42 / 3.47	30 / 1.30	3.2 / 0.08	11 / 0.37	271 / 4.44	13 / 0.27	38 / 1.07	1.3 / 0.02	0.1 / 0.01	0.05	17		318	21	246	6	USGS
Ray Tedeon Irrigation Well	3N/1W-30N1	2-13-57	48	514	6.6	64 / 3.19	25 / 2.06	8.4 / 0.37	1.7 / 0.04	0 / 0.00	296 / 4.85	23 / 0.48	9.3 / 0.26	4.7 / 0.08	0.0 / 0.00	0.10	15		297	7	263	20	DWR
		10-3-57	--	376	8.0	27 / 1.35	27 / 2.21	9.8 / 0.43	1.6 / 0.04	0 / 0.00	186 / 3.05	29 / 0.60	11 / 0.31	6.6 / 0.11	0.0 / 0.00	0.08	20		224	11	178	25	USGS
E. E. Tanferani Irrigation Well	3N/2W-13J1	10-3-57	--	1670	7.5	84 / 4.19	102 / 8.41	75 / 3.26	4.8 / 0.12	0 / 0.00	307 / 5.03	17 / 0.35	390 / 11.00	5.6 / 0.09	0.1 / 0.01	0.09	12		842	20	630	378	USGS
R. M. Christiansen Irrigation Well	3N/2W-27G1	10-3-57	--	1340	7.8	60 / 2.99	71 / 5.81	88 / 3.83	5.2 / 0.13	0 / 0.00	231 / 3.79	31 / 0.65	300 / 8.46	3.2 / 0.05	0.1 / 0.01	0.08	21		694	30	88	0	USGS
Ruse Connick Co. Irrigation Well	3N/2W-32C1	2-13-57	--	858	7.2	28 / 1.40	22 / 1.80	114 / 4.96	3.8 / 0.10	0 / 0.00	223 / 3.65	16 / 0.33	153 / 4.31	0.6 / 0.01	0.5 / 0.03	0.14	22		470	60	160	0	DWR
		9-25-57	--	1260	7.9	36 / 1.80	36 / 3.00	164 / 7.13	4.8 / 0.12	0 / 0.00	226 / 3.70	23 / 0.48	275 / 7.76	1.6 / 0.03	0.3 / 0.02	0.03	25		677	59	240	55	USGS
P. C. Lorenzen Irrigation Well	3N/2W-35M1	10-3-57	--	1370	8.1	56 / 2.79	68 / 5.61	101 / 4.39	13 / 0.33	0 / 0.00	251 / 4.11	28 / 0.58	310 / 8.74	0.6 / 0.01	C.1 / 0.01	0.07	29		730	33	420	214	USGS

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm a	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M								UKIAH VALLEY (1-15)														
G. C. Gilley Domestic Well	14N/12W-5K1	8-8-57	--	606	8.1	25 / 1.25	45 / 3.67	43 / 1.87	2.3 / 0.06	0 / 0.00	327 / 5.36	55 / 1.15	10 / 0.28	1.0 / 0.02	0.1 / 0.01	0.77	28		371	27	246	0	USGS
Robert C. Kercher Domestic Well	14N/12W-11N1	8-15-57	--	271	8.2	18 / 0.90	18 / 1.51	9.4 / 0.41	1.8 / 0.05	0 / 0.00	143 / 2.34	15 / 0.31	5.2 / 0.15	4.5 / 0.07	0.0 / 0.00	0.06	21		163	14	121	4	USGS
Marcue Mehtonen Domestic Well	14N/12W-26K1	8-15-57	--	351	8.0	23 / 1.15	21 / 1.73	19 / 0.83	0.8 / 0.02	0 / 0.00	189 / 3.10	3.8 / 0.08	19 / 0.54	0.8 / 0.01	0.0 / 0.00	2.5	32		215	22	144	0	USGS
Mayfield Domestic Well	15N/12W-8D1	8-7-57	--	398	8.1	40 / 2.00	16 / 1.28	26 / 1.13	1.1 / 0.03	0 / 0.00	239 / 3.92	1.9 / 0.04	8.0 / 0.23	4.7 / 0.08	0.1 / 0.01	0.12	24		240	25	164	0	USGS
Regina Water Company Municipal Well	15N/12W-21H1	2-11-57	58	276	7.3	24 / 1.20	13 / 1.04	15 / 0.65	1.0 / 0.03	0 / 0.00	159 / 2.61	8.4 / 0.17	5.0 / 0.14	0.2 / 0.00	0.1 / 0.01	1.1	14		160	23	112	0	DWR
D. Broggi Ranch Dom. and Irr. Well	15N/12W-35D1	8-15-57	--	400	8.0	34 / 1.70	13 / 1.06	35 / 1.52	0.8 / 0.02	0 / 0.00	224 / 3.67	1.9 / 0.04	19 / 0.54	0.6 / 0.01	0.0 / 0.00	0.21	35		250	35	138	0	USGS
Frank Brown Domestic Well	16N/12W-5D1	8-8-57	--	350	8.5	23 / 1.15	19 / 1.53	23 / 1.00	0.9 / 0.02	4 / 0.13	177 / 2.90	0.4 / 0.01	24 / 0.68	0.5 / 0.01	0.0 / 0.00	0.00	31		213	27	134	0	USGS
Pacific Gas & Electric Co. Domestic Well	16N/12W-9Q1	8-6-57	--	397	8.4	26 / 1.30	17 / 1.42	37 / 1.61	1.2 / 0.03	5.0 / 0.17	228 / 3.74	5.8 / 0.12	9.0 / 0.25	5.7 / 0.09	0.2 / 0.01	0.04	29		248	37	136	0	USGS
Norman Reece Domestic Well	16N/13W-1J1	8-8-57	--	409	8.3	25 / 1.25	10 / 0.83	55 / 2.39	0.8 / 0.02	3 / 0.10	225 / 3.69	15 / 0.31	12 / 0.34	1.2 / 0.02	0.0 / 0.00	0.07	21		254	53	104	0	USGS
James E. Nelson Domestic Well	17N/12W-18A1	8-6-57	--	1920	8.2	42 / 2.10	6.1 / 0.50	338 / 14.70	2.0 / 0.05	0 / 0.00	180 / 2.95	12 / 0.25	520 / 14.66	1.3 / 0.02	0.6 / 0.03	45	19		1080	85	130	0	USGS
Harry Mathewe Domestic Well	17N/12W-28M1	8-6-57	--	219	7.1	17 / 0.85	12 / 0.95	11 / 0.48	0.6 / 0.02	0 / 0.00	80 / 1.31	21 / 0.44	10 / 0.28	20 / 0.32	0.1 / 0.01	0.01	30		161	21	90	24	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M								SANEL VALLEY (1-16)														
A. De Marcantonio Domestic well	12N/11W-2F1	8-7-57	--	339	8.2	28 / 1.40	22 / 1.80	11 / 0.48	1.6 / 0.04	0 / 0.00	202 / 3.31	12 / 0.25	5.0 / 0.14	2.4 / 0.04	0.2 / 0.01	0.22	17		199	13	160	0	USGS
E. F. Hawn Irrigation Well	13N/11W-7D1	8-8-57	—	390	8.5	26 / 1.30	32 / 2.62	11 / 0.48	0.8 / 0.02	8 / 0.27	221 / 3.62	13 / 0.27	10 / 0.28	0.9 / 0.01	0.0 / 0.00	0.15	24		235	11	196	2	USGS
A. Damiano Irrigation Well	13N/11W-18B1	8-7-57	—	259	8.2	23 / 1.15	11 / 0.93	14 / 0.61	1.4 / 0.04	0 / 0.00	148 / 2.43	14 / 0.12	5.0 / 0.14	2.9 / 0.05	0.2 / 0.01	1.2	14		152	22	104	0	USGS
J. H. Pomroy Co. Irrigation Well	13N/11W-18D1	8-7-57	—	372	8.0	25 / 1.25	26 / 2.15	14 / 0.61	1.2 / 0.03	0 / 0.00	216 / 3.54	12 / 0.25	9.0 / 0.25	2.6 / 0.04	0.1 / 0.01	1.5	20		217	15	170	0	USGS
Hopland Public Utility Dist. Municipal Well	13N/11W-19N1	8-7-57	—	298	8.0	26 / 1.30	19 / 1.54	7.9 / 0.34	0.9 / 0.02	0 / 0.00	180 / 2.95	1.9 / 0.04	6.5 / 0.18	4.3 / 0.07	0.1 / 0.01	0.19	21		177	11	142	0	USGS
Grace Ranch Dom., Irr. & Stk. Well	13N/11W-30H1	8-7-57	—	344	7.4	29 / 1.45	21 / 1.71	12 / 0.52	1.3 / 0.03	0 / 0.00	176 / 2.88	16 / 0.33	8.5 / 0.24	12 / 0.19	0.2 / 0.01	0.52	21		209	14	158	14	USGS

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million (equivalents per million): Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					ALEXANDER VALLEY(1-17)																	
Redwood Hereford Ranch Irr. and Dom. Well	9N/8W-7Q1	1-15-57	60	352	7.2	3.8 / 0.19	3.5 / 0.29	75 / 3.26	5.1 / 0.13	0 / 0.00	218 / 3.57	2.1 / 0.04	9.9 / 0.28	0.2 / 0.00	0.4 / 0.02	0.17	72		279	84	24	0	USGS
Henry Dick Irrigation Well	9N/9W-1P1	1-8-57	48	413	7.6	48 / 2.40	20 / 1.66	13 / 0.57	1.0 / 0.03	0 / 0.00	255 / 4.18	5.8 / 0.12	8.5 / 0.24	0.1 / 0.00	0.0 / 0.00	1.3	18		242	12	203	0	USGS
C. E. Adams Irr. and Dom. Well	9N/9W-4H1	1-8-57	52	350	7.7	28 / 1.40	11 / 0.88	32 / 1.39	1.7 / 0.04	0 / 0.00	206 / 3.38	1.0 / 0.02	15 / 0.42	0.8 / 0.01	0.0 / 0.00	0.12	31		222	37	114	0	USGS
H. B. Remmel Irrigation Well	10N/9W-18R1	1-10-57	58	317	7.0	31 / 1.55	18 / 1.51	8.5 / 0.37	1.1 / 0.03	0 / 0.00	184 / 3.02	9.6 / 0.20	8.4 / 0.24	0.8 / 0.01	0.0 / 0.00	1.8	19		189	11	153	2	USGS
Wm. D. Dana Irrigation Well	10N/9W-26L1	1-15-57	62	468	7.6	25 / 1.25	44 / 3.58	10 / 0.44	0.2 / 0.01	0 / 0.00	282 / 4.62	13 / 0.27	7.2 / 0.20	13 / 0.21	0.1 / 0.01	0.13	36		288	8	242	11	USGS
Springfield Mill Co. Industrial Well	10N/9W-32R1	1-15-57	66	770	7.3	78 / 3.89	22 / 1.85	72 / 3.13	0.7 / 0.02	0 / 0.00	488 / 8.00	23 / 0.48	12 / 0.34	0.3 / 0.00	0.5 / 0.03	0.28	43		492	35	287	0	USGS
Italian Swiss Colony Irrigation Well	11N/10W-28N1	1-9-57	62	377	7.4	30 / 1.50	27 / 2.24	10 / 0.44	0.6 / 0.02	0 / 0.00	226 / 3.70	14 / 0.29	5.7 / 0.16	5.9 / 0.10	0.0 / 0.00	0.12	25		229	10	187	2	USGS
Italian Swiss Colony Ind. and Dom. Well	11N/10W-33A1	1-9-57	58	340	7.6	32 / 1.60	18 / 1.46	14 / 0.61	0.8 / 0.02	0 / 0.00	195 / 3.20	8.6 / 0.18	10 / 0.28	0.7 / 0.01	0.0 / 0.00	1.8	11		193	17	153	0	USGS
C. Pellegrini Domestic Well	11N/10W-33G1	1-10-57	48	180	6.9	10 / 0.50	7.1 / 0.58	15 / 0.65	0.8 / 0.02	0 / 0.00	61 / 1.00	1.0 / 0.02	21 / 0.59	6.6 / 0.11	0.0 / 0.00	0.06	35		127	37	54	4	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by[c]
	MDB&M					SANTA ROSA VALLEY(1-18)																	
Roland Mattri Irrigation Well	5N/9W-3F1	1-22-57	64	529	7.3	30 / 1.50	21 / 1.72	42 / 1.83	3.3 / 0.08	0 / 0.00	135 / 2.21	74 / 1.54	51 / 1.44	0.2 / 0.00	0.2 / 0.01	0.01	40		328	36	161	51	DWR
George Crane Irrigation Well	6N/7W-17E1	1-22-57	62	428	7.4	5.2 / 0.26	1.7 / 0.14	92 / 4.00	1.3 / 0.03	0 / 0.00	208 / 3.41	7.6 / 0.16	33 / 0.93	0.3 / 0.01	1.2 / 0.06	1.2	30		276	91	20	0	DWR
John Wileon Irrigation Well	6N/7W-18R1	1-22-57	48	1050	7.1	83 / 4.14	53 / 4.37	68 / 2.96	1.6 / 0.04	0 / 0.00	460 / 7.54	53 / 1.10	70 / 1.97	34 / 0.54	0.2 / 0.01	0.10	56		645	26	426	49	DWR
Tex Carley Irrigation Well	6N/7W-30D1	1-23-57	58	361	7.2	33 / 1.65	18 / 1.47	16 / 0.70	0.9 / 0.02	0 / 0.00	193 / 3.16	9.1 / 0.19	11 / 0.31	8.2 / 0.13	0.2 / 0.01	0.01	63		254	18	156	0	DWR
G. Mallory Domestic Well	6N/8W-3B1	1-17-57	60	361	7.1	23 / 1.15	21 / 1.69	18 / 0.78	1.4 / 0.04	0 / 0.00	144 / 2.36	0.0 / 0.00	38 / 1.07	11 / 0.18	0.1 / 0.01	0.01	46		230	21	142	24	USGS
Cotati Public Utility Dist. Municipal Well	6N/8W-35A2	1-22-57	70	301	7.2	11 / 0.55	6.2 / 0.51	41 / 1.78	1.7 / 0.04	0 / 0.00	107 / 1.75	6.9 / 0.14	35 / 0.99	0.2 / 0.00	0.2 / 0.01	0.10	61		216	63	53	0	DWR
City of Sebastopol Water Dept. Mun. Well	6N/9W-2G1	1-16-57	65	300	7.2	43 / 2.15	3.0 / 0.25	16 / 0.70	0.8 / 0.02	0 / 0.00	154 / 2.52	5.6 / 0.12	15 / 0.42	2.8 / 0.05	0.0 / 0.00	0.00	44		206	22	120	0	USGS
Kenwood Fire Dept. Domestic Well	7N/6W-29P1	1-23-57	46	364	7.6	18 / 0.90	13 / 1.10	44 / 1.91	3.3 / 0.08	0 / 0.00	227 / 3.72	0.0 / 0.00	14 / 0.40	0.2 / 0.00	0.3 / 0.02	0.09	44		249	48	100	0	DWR
Mrs. Mead Clark Irr. and Dom. Well	7N/7W-15C1	1-16-57	56	251	7.3	14 / 0.70	12 / 0.96	22 / 0.96	4.2 / 0.11	0 / 0.00	154 / 2.52	2.1 / 0.04	6.1 / 0.17	0.1 / 0.00	0.3 / 0.02	0.01	67		204	35	83	0	USGS
Earl Bethards Irr. and Dom. Well	7N/7W-29D1	1-23-57	50	413	7.6	26 / 1.30	18 / 1.44	37 / 1.61	5.7 / 0.15	0 / 0.00	245 / 4.02	1.2 / 0.03	16 / 0.45	0.3 / 0.01	0.3 / 0.02	0.23	61		286	37	137	0	DWR
W. E. Samueleon Domestic Well	7N/8W-3L1	1-16-57	62	474	7.2	30 / 1.50	21 / 1.69	41 / 1.78	2.3 / 0.06	0 / 0.00	222 / 3.64	35 / 0.73	25 / 0.70	0.1 / 0.00	0.2 / 0.01	0.07	57		321	35	160	0	USGS
C. Bordeesa Domestic Well	7N/8W-5G1	1-17-57	56	436	6.9	24 / 1.20	22 / 1.84	24 / 1.04	4.7 / 0.12	0 / 0.00	144 / 2.36	5.8 / 0.12	47 / 1.33	26 / 0.42	0.1 / 0.01	0.00	80		305	25	152	34	USGS
Harry Raemussen Irrigation Well	7N/8W-18Q1	1-18-57	62	544	7.1	28 / 1.40	24 / 1.96	53 / 2.31	2.5 / 0.06	0 / 0.00	276 / 4.52	0.0 / 0.00	42 / 1.18	1.6 / 0.03	0.2 / 0.01	0.09	50		337	40	168	0	USGS
C. Dotti Irrigation Well	7N/8W-31C1	1-23-57	58	491	7.3	29 / 1.45	22 / 1.79	40 / 1.74	1.6 / 0.04	0 / 0.00	207 / 3.39	7.4 / 0.15	34 / 0.96	27 / 0.44	0.4 / 0.02	0.07	40		303	35	162	0	DWR
A. Marke Dom. and Irr. Well	7N/8W-33M1	1-17-57	62	353	7.2	26 / 1.30	17 / 1.40	24 / 1.04	1.5 / 0.04	0 / 0.00	200 / 3.28	7.7 / 0.16	15 / 0.42	0.0 / 0.00	0.1 / 0.01	0.06	50		240	28	135	0	USGS

a. Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M					SANTA ROSA VALLEY (1-18) (Cont.)																	
C. W. Gilbert Domestic Well	7N/9W-9F1	1-16-57	41	151	6.6	10 / 0.50	4.6 / 0.38	14 / 0.61	1.2 / 0.03	0 / 0.00	64 / 1.05	11 / 0.23	10 / 0.28	0.0 / 0.00	0.2 / 0.01	0.00	63		146	40	44	0	USGS
Al Helwig Irr. and Dom. Well	7N/9W-29R1	1-16-57	57	253	6.8	18 / 0.90	11 / 0.88	18 / 0.78	1.9 / 0.05	0 / 0.00	114 / 1.87	16 / 0.33	14 / 0.39	0.0 / 0.00	0.4 / 0.02	0.00	63		198	30	89	0	USGS
Sebastopol Meat Co. Industrial Well	7N/9W-36M1	1-16-57	48	301	7.1	24 / 1.20	7.7 / 0.63	29 / 1.26	1.1 / 0.03	0 / 0.00	160 / 2.62	2.1 / 0.04	20 / 0.56	0.1 / 0.00	0.1 / 0.01	0.06	47		210	40	92	0	USGS
H. A. Faught Irr. and Dom. Well	8N/8W-20Q1	1-16-57	64	503	7.0	23 / 1.15	22 / 1.77	48 / 2.09	6.0 / 0.15	0 / 0.00	223 / 3.65	15 / 0.31	45 / 1.27	0.4 / 0.01	0.2 / 0.01	0.14	84		354	41	146	0	USGS
Frei Bros. Winery Dom. and Ind. Well	9N/10W-1C1	1-15-57	60	206	7.4	13 / 0.65	9.0 / 0.74	18 / 0.78	0.5 / 0.01	0 / 0.00	123 / 2.02	0.6 / 0.01	6.9 / 0.19	0.0 / 0.00	0.4 / 0.02	0.02	18		127	36	69	0	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M					SANTA CLARA VALLEY, EAST BAY AREA (2-9a)																	
Trailer Haven Auto Court; Domestic Well	2S/3W-36F1	8-5-57	68	570	8.5	35 / 1.75	24 / 2.01	55 / 2.39	1.2 / 0.03	12 / 0.40	260 / 4.26	26 / 0.54	30 / 0.85	12 / 0.19	0.2 / 0.01	0.34	33		357	39	188	0	DWR
Shinoda Nursery Irrigation Well	2S/3W-36K1	8-5-57	68	585	8.6	30 / 1.50	22 / 1.78	70 / 3.04	2.2 / 0.06	12 / 0.40	272 / 4.46	21 / 0.44	38 / 1.07	4.1 / 0.07	0.2 / 0.01	0.38	35		369	48	164	0	DWR
John Perata Domestic Well	2S/3W-36M1	8-5-57	68	814	8.4	82 / 4.09	35 / 2.90	39 / 1.70	1.3 / 0.03	9 / 0.30	293 / 4.80	48 / 1.00	48 / 1.35	72 / 1.16	0.3 / 0.02	0.19	31		510	19	350	95	DWR
Nakashima Nursery Irrigation Well	2S/3W-36Q1	8-6-57	68	634	8.4	25 / 1.25	23 / 1.91	81 / 3.52	1.7 / 0.04	8 / 0.27	286 / 4.69	29 / 0.60	42 / 1.18	5.7 / 0.09	0.3 / 0.02	0.41	35		392	52	158	0	DWR
Hayward Union High School Dist.; Dom. and Irr. Well	3S/2W-7G1	9-13-57	68	380	8.1	35 / 1.75	16 / 1.29	25 / 1.09	2.1 / 0.05	0 / 0.00	162 / 2.66	28 / 0.58	27 / 0.76	1.5 / 0.02	0.0 / 0.00	0.14	14		229	26	152	19	DWR
J. Harr Industrial Well	3S/2W-21F1	9-12-57	68	1120	7.3	105 / 5.24	45 / 3.71	64 / 2.78	1.7 / 0.04	0 / 0.00	372 / 6.10	51 / 1.06	114 / 3.21	82 / 1.32	0.2 / 0.01	0.18	28		643	24	448	143	DWR
E. R. Lamarasux Domestic Well	3S/2W-32R1	9-13-57	64	2770	7.7	115 / 5.74	137 / 11.28	278 / 12.09	2.1 / 0.05	0 / 0.00	658 / 10.78	123 / 2.56	564 / 15.90	25 / 0.40	0.7 / 0.04	0.83	26		1600	41	852	312	DWR
H. Miller Domestic Well	3S/2W-34J1	9-12-57	66	1330	7.6	120 / 5.99	43 / 3.56	106 / 4.61	0.8 / 0.02	0 / 0.00	510 / 8.36	91 / 1.89	108 / 3.05	64 / 1.03	0.4 / 0.02	0.83	29		814	33	478	60	DWR
H. C. Cummings Dom. and Stk. Well	3S/2W-36K1	9-12-57	67	802	8.2	53 / 2.64	34 / 2.83	64 / 2.78	1.7 / 0.04	0 / 0.00	278 / 4.56	27 / 0.56	90 / 2.54	40 / 0.65	0.8 / 0.04	0.14	24		472	34	274	46	DWR
G. W. Black Domestic Well	3S/2W-36K2	9-12-57	65	733	8.2	58 / 2.89	34 / 2.78	54 / 2.35	2.1 / 0.05	0 / 0.00	328 / 5.38	43 / 0.90	61 / 1.72	7.3 / 0.12	0.4 / 0.02	0.21	16		437	29	284	0	DWR
Avansino-Mortensen Co. Irrigation Well	3S/3W-1G3	8-5-57	75	1020	8.1	44 / 2.20	20 / 1.64	156 / 6.79	1.6 / 0.04	0 / 0.00	357 / 5.85	58 / 1.21	121 / 3.41	2.9 / 0.05	0.4 / 0.02	0.72	31		612	64	192	0	DWR
W. R. Sharp Dom. and Irr. Well	3S/3W-3L1	8-6-57	62	865	8.2	89 / 4.44	35 / 2.85	43 / 1.87	1.3 / 0.03	0 / 0.00	317 / 5.20	52 / 1.08	57 / 1.61	71 / 1.15	0.3 / 0.02	0.24	32		537	20	365	105	DWR
H. J.Kaiser Industrial Well	4S/1W-21M1	8-20-57	--	686	7.4	34 / 1.70	45 / 3.74	42 / 1.83	2.1 / 0.05	0 / 0.00	295 / 4.84	62 / 1.29	39 / 1.10	1.8 / 0.03	0.0 / 0.00	0.48	17	Fe 0.00; Al 0.08; As 0.00; Cu 0.00; Pb 0.00; Mn 0.00; Zn 0.10; Cr^6 0.00	388	25	272	30	USGS
Joseph Thomas Irr. and Dom. Well	4S/1W-29M1	10-22-57	--	4280	--								1355										DWR
George Silva Irrigation Well	4S/1W-30K3	8-6-57	52	6210	7.1	112 / 5.59	645 / 53.01	221 / 9.61	10 / 0.26	0 / 0.00	349 / 5.72	384 / 7.99	1940 / 54.71	3.3 / 0.05	0.0 / 0.00	0.45	26	I 0.00; Br 7	3510	14	2930	2640	USGS

o Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Iodine (I), Bromine (Br)

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (No)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M					SANTA CLARA VALLEY, SOUTH BAY AREA (2-9b)																	
City of Palo Alto Municipal Well	5S/3W-35G1	8-15-57	68	1080	7.7	61 / 3.04	18 / 1.52	133 / 5.79	2.6 / 0.07	0 / 0.00	254 / 4.16	42 / 0.87	198 / 5.58	2.3 / 0.04	0.2 / 0.01	0.30	26		608	56	228	20	USGS
J. C. Roee Domestic Well	6S/1E-4M1	8-13-57	78	997	7.4	44 / 2.20	60 / 4.93	83 / 3.61	2.7 / 0.07	0 / 0.00	487 / 7.98	49 / 1.02	63 / 1.78	18 / 0.29	0.2 / 0.01	1.0	27		588	33	356	0	USGS
M. Machado Irrigation Well	6S/1E-30M1	8-14-57	60	593	7.0	53 / 2.64	28 / 2.28	33 / 1.44	2.0 / 0.05	0 / 0.00	283 / 4.64	47 / 0.98	24 / 0.68	9.8 / 0.16	0.0 / 0.00	0.94	29		366	22	246	14	USGS
D. Burrell Irr. and Dom. Well	6S/1W-14L4	8-14-57	65	1740	7.8	121 / 6.04	84 / 6.88	149 / 6.48	2.6 / 0.07	0 / 0.00	491 / 8.05	349 / 7.27	139 / 3.92	0.7 / 0.01	0.0 / 0.00	0.42	24		1110	33	646	243	USGS
R. T. Collier Corp. Industrial Well	6S/1W-16A1	8-14-57	74	425	7.7	19 / 0.95	5.5 / 0.45	68 / 2.96	1.4 / 0.04	0 / 0.00	207 / 3.39	25 / 0.52	15 / 0.42	0.0 / 0.00	0.0 / 0.00	0.10	23		259	67	70	0	USGS
Fred Lara Irr. and Dom. Well	6S/1W-19B1	8-14-57	70	591	7.8	58 / 2.89	18 / 1.48	41 / 1.78	16 / 0.04	0 / 0.00	268 / 4.39	35 / 0.73	26 / 0.73	12 / 0.19	0.0 / 0.00	0.19	30		354	29	218	0	USGS
T. A. Wilcox Broe. Irrigation Well	6S/1W-26D1	8-14-57	74	611	7.7	54 / 2.69	16 / 1.35	51 / 2.22	1.6 / 0.04	0 / 0.00	236 / 3.87	58 / 1.21	40 / 1.13	0.1 / 0.00	0.0 / 0.00	0.14	25		362	35	202	8	USGS
Marionelli Bros. Irr. and Dom. Well	6S/1W-33C1	8-14-57	68	493	7.7	53 / 2.64	16 / 1.31	29 / 1.26	1.6 / 0.04	0 / 0.00	239 / 3.92	33 / 0.69	15 / 0.42	4.1 / 0.07	0.0 / 0.00	0.06	31		301	24	197	1	USGS
F. Ormsby Domestic Well	6S/2W-9H1	8-14-57	67	589	7.6	46 / 2.30	15 / 1.23	60 / 2.61	2.0 / 0.05	0 / 0.00	272 / 4.46	27 / 0.56	39 / 1.10	0.3 / 0.00	0.0 / 0.00	0.18	32		355	42	177	0	USGS
Holthouse Irr. and Dom. Well	6S/2W-14R1	8-14-57	68	516	7.6	46 / 2.30	14 / 1.14	47 / 2.04	1.4 / 0.04	0 / 0.00	262 / 4.29	27 / 0.56	20 / 0.56	0.2 / 0.00	0.0 / 0.00	0.08	26		311	37	172	0	USGS
Ormande Irr. and Dom. Well	6S/2W-16Q1	8-14-57	66	862	8.1	103 / 5.14	31 / 2.58	38 / 1.65	1.6 / 0.04	0 / 0.00	327 / 5.36	127 / 2.64	45 / 1.27	5.5 / 0.09	0.0 / 0.00	0.13	30		542	18	386	118	USGS
Antoku Irr. and Dom. Well	6S/2W-17M1	8-14-57	70	1100	7.8	135 / 6.74	42 / 3.34	48 / 2.09	1.7 / 0.04	0 / 0.00	446 / 7.31	139 / 2.89	62 / 1.75	2.1 / 0.03	0.0 / 0.00	0.05	46		695	17	504	138	USGS
H. Mantelli Irrigation Well	6S/2W-28R1	8-15-57	63	620	7.8	75 / 3.74	23 / 1.89	22 / 0.96	1.3 / 0.03	0 / 0.00	315 / 5.16	22 / 0.46	29 / 0.82	3.8 / 0.06	0.1 / 0.01	0.00	30		361	15	281	23	USGS
H. Mantelli Irr. and Dom. Well	6S/2W-34M1	8-15-57	66	492	7.8	53 / 2.64	19 / 1.57	21 / 0.91	1.2 / 0.03	0 / 0.00	249 / 4.08	15 / 0.31	20 / 0.56	12 / 0.19	0.0 / 0.00	0.01	30		294	18	210	6	USGS
O. P. Gluhaich Irrigation Well	6S/2W-36H2	8-15-57	66	748	7.8	95 / 4.74	21 / 1.74	33 / 1.44	1.9 / 0.05	0 / 0.00	322 / 5.28	41 / 0.85	50 / 1.41	15 / 0.24	0.0 / 0.00	0.07	28		444	18	324	60	USGS
City of Palo Alto Municipal Well	6S/3W-2D1	8-15-57	65	700	7.9	60 / 2.99	16 / 1.29	68 / 2.96	2.1 / 0.05	0 / 0.00	274 / 4.49	52 / 1.08	52 / 1.47	11 / 0.18	1.2 / 0.06	0.20	23		420	41	214	0	USGS
City of Palo Alto Municipal Well	6S/3W-12C1	8-15-57	70	584	7.8	38 / 1.90	10 / 0.86	81 / 3.52	2.1 / 0.05	0 / 0.00	258 / 4.23	36 / 0.75	48 / 1.35	3.0 / 0.05	0.1 / 0.01	0.11	29		374	56	138	0	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M								LIVERMORE VALLEY (2-10)														
Peter Dagnino Stk. and Dom. Well	2S/2E-27C1	3-29-57	--	4580	--			772 / 33.58					1330 / 37.51			28				77	490		USGS
		10-15-57	--	4610	--			746 / 32.45					1450 / 40.89	15 / 0.24		27				74	556		USGS
John H. Hanna Domestic Well	2S/2E-35G1	3-29-57	--	1410	--			238 / 10.35					286 / 8.07			3.7				75	170		USGS
		10-15-57		1450	--			238 / 10.35					292 / 8.23	9.6 / 0.15		4.1				72	197		USGS
Alameda County Dom. and Irr. Well	3S/1E-3Q1	5-24-57	--	997	--			100 / 4.35					118 / 3.33			1.6				41	313		USGS
		7-30-57		938	7.8	69 / 3.44	35 / 2.91	62 / 2.70	1.6 / 0.04	0 / 0.00	327 / 5.36	40 / 0.83	97 / 2.74	11 / 0.18	0 / 0.00	1.0				30	318	50	USGS
		10-18-57		1010	--			99 / 4.31					128 / 3.61	17 / 0.27		1.5				64	335		USGS
Hugh Walker Irrigation Well	3S/1E-7Q1	4-30-57	60	838	7.8	40 / 2.00	23 / 1.92	118 / 5.13	1.4 / 0.04	0 / 0.00	342 / 5.61	54 / 1.12	74 / 2.09	1.7 / 0.03	0.3 / 0.02	0.82	22	Fe 0.04; Al 0.00; Ae 0.00; Cu 0.03; Pb 0.00; Mn 0.00; Zn 0.02; Cr^6 0.00		56	196	0	USGS
		5-17-57	--	832	--			119 / 5.18					77 / 2.17			0.81		NO_2 0.00		59	183		USGS
		5-21-57	58	831	7.7	31 / 1.55	25 / 2.09	114 / 4.96	1.7 / 0.04	0 / 0.00	338 / 5.54	52 / 1.08	75 / 2.12	1.0 / 0.02	0.2 / 0.01	0.63				57	182	0	USGS
		6-24-57	70	916	7.3	29 / 1.45	32 / 2.63	123 / 5.35	2.0 / 0.05	0 / 0.00	352 / 5.77	62 / 1.29	83 / 2.34	1.3 / 0.02	0.3 / 0.02	0.92		NO_2 0.00		56	204	0	USGS
		10-15-57	--	890	--			121 / 5.26					89 / 2.51	2.6 / 0.04		0.86		Fe 0.00; Al 0.00; Ae 0.00; Cu 0.00; Pb 0.00; Mn 0.00; Zn 0.02; Cr^6 0.00; NO_2 0.00		55	212		USGS
U. S. Air Force Dom. and Irr. Well	3S/1E-8H2	4-30-57	64	638	7.5	44 / 2.20	43 / 3.56	32 / 1.39	1.2 / 0.02	0 / 0.00	296 / 4.85	42 / 0.87	37 / 1.04	0.1 / 0.01	11 / 0.18	0.36	28				288	45	USGS
		5-2-57	--	926	--			72 / 3.13					104 / 2.93			0.89				33	312		USGS
		5-21-57	63	645	7.4	40 / 2.00	44 / 3.58	33 / 1.44	1.5 / 0.04	0 / 0.00	296 / 4.85	43 / 0.90	38 / 1.07	9.3 / 0.15	0.0 / 0.00	0.32		NO_2 0.00		20	279	32	USGS
		6-24-57	62	654	7.3	41 / 2.05	42 / 3.44	31 / 1.35	1.4 / 0.04	0 / 0.00	288 / 4.72	42 / 0.87	38 / 1.07	9.2 / 0.15	0.2 / 0.01	0.40		NO_2 0.00		20	275	37	USGS

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^6), and Nitrate (NO_3)

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					LIVERMORE VALLEY (2-10) (Cont.)																	
U. S. Air Force Dom. and Irr. Well	3S/1E-8H2	10-17-57	--	800	--			58 2.52					73 2.06	14 0.23		0.53				29	314		USGS
Cecil M. Cope Irr. and Dom. Well	3S/1E-10Q2	5-24-57	--	520	--			24 1.04					32 0.90			0.27				22	236		USGS
		10-17-57	--	522	8.4	51 2.54	25 2.06	22 0.96	1.8 0.05	7 0.23	209 3.48	48 1.00	33 0.93	2.3 0.04	0.0 0.00	0.15	20		313	17	230	47	USGS
E. Hageman Dom. and Irr. Well	3S/1E-11H1	4-29-57	63	608	7.4	40 2.00	45 3.72	23 1.00	1.3 0.03	0 0.00	290 4.75	35 0.73	30 0.85	20 0.32	0.2 0.01	0.25	27	Fe 0.00; Al 0.00 As 0.00; Cu 0.04 Pb 0.00; Mn 0.00 Zn 0.08; Cr^6 0.00	365	15	286	48	USGS
		5-21-57	64	631	7.4	39 1.95	46 3.78	22 0.96	1.7 0.04	0 0.00	291 4.77	35 0.73	32 0.90	16 0.26	0.0 0.00	0.16	24		359	14	287	48	USGS
		6-24-57	64	630	7.2	38 1.90	46 3.75	23 1.00	1.8 0.05	0 0.00	290 4.75	35 0.73	31 0.87	15 0.25	0.0 0.00	0.26	24	NO_2 0.00	357	15	283	45	USGS
		10-17-57	--	619	--			23 1.00					36 1.02	18 0.29		0.15				15	286		USGS
California Rock and Gravel Co. Dom. and Ind. Well	3S/1E-13P2	3-29-57	--	466	--			60 2.61					34 0.96			0.20				44	166		USGS
		10-17-57	--	562	7.9	50 2.50	26 2.14	31 1.35	1.7 0.04	0 0.00	246 4.03	44 0.92	36 1.02	0.9 0.01	0.0	0.33	20		331	22	232	30	USGS
H. J. Kaieer Co. Irr. and Dom. Well	3S/1E-15L1	3-29-57	--	460	--			24 1.04					27 0.76			0.20				20	205		USGS
		4-30-57	63	519	7.2	51 2.54	24 1.98	24 1.04	1.0 0.03	0 0.00	228 3.74	37 0.77	27 0.76	11 0.18	0.2 0.01	0.15	22	Fe 0.00; Al 0.00 As 0.00; Cu 0.04 Pb 0.00; Mn 0.00 Zn 0.01; Cr^6 0.00	309	19	226	39	USGS
		5-21-57	62	532	7.4	45 2.25	27 2.23	23 1.00	1.2 0.03	0 0.00	229 3.75	38 0.79	29 0.82	9.3 0.15	0.0 0.00	0.04	20	NO_2 0.00	306	18	224	37	USGS
		6-24-57	60	534	7.0	51 2.54	24 1.98	24 1.04	1.4 0.04	0 0.00	225 3.69	39 0.81	29 0.82	9.4 0.15	0.5 0.03	0.24	18	NO_2 0.00	308	19	226	42	USGS
H. J. Kaieer Co. Industrial well	3S/1E-16H1	10-17-57	--	526	--			24 1.04					34 0.96	12 0.19		0.10				19	226		USGS
San Francisco Water Dept. Mun., Irr. and Dom. Well	3S/1E-19A5	5-17-57	--	544	--			33 1.44					32 0.90			0.28				24	225		USGS
		10-15-57	--	910	8.5	81 4.04	55 4.56	45 1.96	2.6 0.07	16 0.53	395 6.47	79 1.64	56 1.58	11 0.18	0.1 0.01	0.41	20		560	18	430	80	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^6), and Nitrate (NO_2).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					LIVERMORE VALLEY (2-10) (Cont.)																	
Charles Nissen Irrigation Well	3S/2E-2R1	5-21-57	67		--								412 / 11.62	5.9 / 0.10				NO_2 0.00					DWR
		6-25-57	70		--								507 / 14.30	5.6 / 0.09				NO_2 0.00					DWR
Graham Nissen Domestic Well	3S/2E-3Q2	2-26-57	64	971	7.4	61 / 3.04	55 / 4.52	63 / 2.74	1.9 / 1.09	0 / 0.00	334 / 5.47	26 / 0.54	123 / 3.47	28 / 0.47	0.1 / 0.01	0.65	28		551	26	377	105	DWR
Graham Nissen Irrigation Well	3S/2E-3R2	5-21-57	64		--								80 / 2.26	43 / 0.69				NO_2 0.00					DWR
		6-24-57	66		--								81 / 2.28	40 / 0.65				NO_2 0.00					DWR
California Water Service Co. Domestic Well	3S/2E-4H2	3-29-57	--	674	--			32 / 1.39					40 / 1.13			0.40				18	313		USGS
		10-16-57	--	699	8.6	43 / 2.15	47 / 3.89	40 / 1.74	1.8 / 0.05	15 / 0.50	289 / 4.74	37 / 0.77	43 / 1.21	20 / 0.32	0.1 / 0.01	0.42			420	22	302	0	USGS
H. L. Hagemann Dom. and Irr. Well	3S/2E-7K1	2-26-57	64	782	7.2	48 / 2.40	60 / 4.93	27 / 1.17	2.1 / 0.05	0 / 0.00	353 / 5.79	44 / 0.92	44 / 1.24	29 / 0.47	0.1 / 0.01	0.29	25		453	14	368	77	DWR
		3-29-57	--	659	--			28 / 1.22					40 / 1.13			0.30				17	308		USGS
		4-29-57	67	733	7.4	48 / 2.40	57 / 4.72	26 / 1.13	1.6 / 0.04	0 / 0.00	343 / 5.62	41 / 0.85	38 / 1.07	30 / 0.48	0.1 / 0.01	0.26	28	Fe 0.00; Al 0.00; As 0.00; Cu 0.04; Pb 0.00; Mn 0.00; Zn 0.06; Cr^6 0.00	439	14	356	75	USGS
		5-21-57	56	759	7.4	47 / 2.35	56 / 4.62	26 / 1.13	1.7 / 0.04	0 / 0.00	343 / 5.62	43 / 0.90	39 / 1.10	26 / 0.42	0.0 / 0.00	0.20	24	NO_2 0.00	432	14	349	68	DWR
		6-24-57	72	723	7.2	47 / 2.35	55 / 4.54	26 / 1.13	1.9 / 0.05	0 / 0.00	343 / 5.62	42 / 0.87	40 / 1.13	26 / 0.42	0.4 / 0.02	0.33	26	NO_2 0.00	434	14	345	64	DWR
		10-17-57	--	721	--			28 / 1.22					48 / 1.35	29 / 0.47		0.15				12	353		USGS
California Water Service Co. Dom. and Mun. Well	3S/2E-8H1	3-28-57	--	629	--			33 / 1.44					43 / 1.21			0.37				21	276		USGS
		10-16-57	--	699	8.4	46 / 2.30	47 / 3.90	38 / 1.65	1.9 / 0.05	7 / 0.23	323 / 5.29	40 / 0.83	36 / 1.02	21 / 0.34	0.0 / 0.00	0.32	32		428	21	310	34	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^6), and Nitrate (NO_2).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					LIVERMORE VALLEY(2-10) (Cont.)																	
Sweet Domestic Well	3S/2E-8N2	2-26-57	64	962	7.1	55 / 2.74	79 / 6.50	31 / 1.35	2.0 / 0.05	0 / 0.00	420 / 6.88	46 / 0.96	58 / 1.64	60 / 0.97	0.1 / 0.01	0.33	25		563	13	464	118	DWR
J. H. Barber Dom. and Irr. Well	3S/2E-10E1	2-25-57	63	1,240	7.0	75 / 3.74	79 / 6.50	62 / 2.70	2.2 / 0.06	0 / 0.00	393 / 6.44	36 / 0.75	138 / 3.89	88 / 1.42	0.1 / 0.01	0.57	34		708	21	511	190	DWR
		3-29-57	—	1,020	—			65 / 2.83					136 / 3.84			0.60				27	375		USGS
		5-21-57	63		—								140 / 3.95	82 / 1.32				NO_2 0.00					DWR
		6-25-57	62		—								148 / 4.17	81 / 1.31				NO_2 0.00					DWR
		10-16-57	—	1,220	—			66 / 2.87					158 / 4.46	78 / 1.26		0.41					522		USGS
Coast Manufacturing Co. Dom. and Irr. Well	3S/2E-10F1	5-22-57	65		—								80 / 2.26	23 / 0.37				NO_2 0.00					DWR
		6-24-57	70		—			81 / 0.23						0.0 / 0.00				NO_2 0.00					DWR
Amling DeVore Nursery Dom. and Irr. Well	3S/2E-10H1	5-10-57	—	747	—			73 / 3.18					72 / 2.03			1.2							USGS
		5-22-57	62		—								72 / 2.03	23 / 0.37				NO_2 0.01					DWR
		6-25-57	66		—								74 / 0.21	23 / 0.04				NO_2 0.00					DWR
		10-16-57	—	760	8.5	42 / 2.10	33 / 2.70	70 / 3.04	1.9 / 0.05	10 / 0.33	246 / 4.03	44 / 0.92	76 / 2.14	27 / 0.44	0.1 / 0.01	0.86	29		455	39	240	22	USGS
Seckler Dom. and Irr. Well	3S/2E-10P2	5-22-57	65		—								70 / 1.97	35 / 0.56				NO_2 0.25					DWR
		6-25-57	64		—								89 / 0.25	49 / 0.08				NO_2 0.00					DWR
Twin Nurseries Irrigation Well	3S/2E-11K1	8-2-57	70	999	7.8	50 / 2.50	32 / 2.61	106 / 4.61	2.3 / 0.06	0 / 0.00	248 / 4.06	85 / 1.77	149 / 4.20	2.5 / 0.04	0.4 / 0.02	2.7	12		564	47	256	53	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^6), and Nitrate (NO_2).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					LIVERMORE VALLEY (2-10) (Cont.)																	
R. S. Vanderbur Domestic Well	3S/2E-11K2	2-26-57	62	624	7.4	47 / 2.35	17 / 1.40	62 / 2.70	2.4 / 0.06	0 / 0.00	263 / 4.31	38 / 0.79	42 / 1.18	9.3 / 0.15	0.2 / 0.01	0.68	26		374	41	189	0	DWR
Bargmann Dom. and Irr. Well	3S/2E-14B1	5-22-57	61										72 / 2.03	18 / 0.29				NO_2 0.00					DWR
		6-25-57	66										61 / 0.17	13 / 0.02				NO_2 0.00					DWR
Harry Leeds Dom. and Irr. Well	3S/2E-15B1	5-22-57	64										87 / 2.45	35 / 0.56				NO_2 0.00					DWR
California Water Service Co. Mun. Well	3S/2E-15C1	6-25-57	70										94 / 2.65	43 / 0.69				NO_2 0.00					DWR
P. B. Archibald Domestic Well	3S/2E-15J1	2-27-57	65	805	7.1	27 / 1.35	58 / 4.77	47 / 2.04	1.1 / 0.03	0 / 0.00	213 / 3.49	60 / 1.25	83 / 2.34	59 / 0.95	0.1 / 0.01	0.66	38		479	25	307	82	DWR
		5-21-57	67										91 / 2.57	54 / 0.87				NO_2 0.00					DWR
		6-24-57	65										92 / 0.26	57 / 0.09				NO_2 0.00					DWR
Concannon Winery Irrigation Well	3S/2E-15K1	5-22-57	--										55 / 1.55	4.6 / 0.07				NO_2 0.25					DWR
		6-24-57	66										56 / 0.16	0.1 / 0.00				NO_2 0.00					DWR
Concannon Winery Industrial Well	3S/2E-15Q1	5-22-57	63										45 / 1.27	16 / 0.25				NO_2 0.00					DWR
		6-24-57	64										48 / 1.35	13 / 0.05				NO_2 0.00					DWR
St. Michaels Cemetery Irrigation Well	3S/2E-16A1	5-22-57	61										39 / 1.10	64 / 1.04				NO_2 0.00					DWR
		6-25-57	70										40 / 1.13	67 / 1.08				NO_2 0.00					DWR

a Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^6), and Nitrate (NO_2).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					LIVERMORE VALLEY (2-10) (Cont.)																	
Livermore Sanitarium Domestic Well	3S/2E-16E1	2-27-57	64	789	7.1	43 / 2.15	64 / 5.26	31 / 1.35	1.9 / 0.05	0 / 0.00	375 / 6.15	59 / 1.23	36 / 1.02	20 / 0.32	0.2 / 0.01	0.42	25		465	15	372	63	DWR
		8-1-57	65	675	7.6	35 / 1.75	47 / 3.84	39 / 1.70	1.7 / 0.04	0 / 0.00	283 / 4.64	33 / 0.69	57 / 1.61	12 / 0.20	0.2 / 0.01	0.27	25						DWR
Wente Bros. Winery Ind. and Dom. Well	3S/2E-16J1	5-22-57	62		--								26 / 0.73	5.0 / 0.08				NO_2 0.03					DWR
		6-24-57	68		--								26 / 0.73	5.1 / 0.08				NO_2 0.00					DWR
California Water Service Co. Domestic Well	3S/2E-17B1	3-28-57	--	652	--			37 / 1.61					40 / 1.13			0.37				22	286		USGS
		10-16-57	--	809	8.5	40 / 2.00	42 / 3.48	75 / 3.26	1.8 / 0.05	10 / 0.33	348 / 5.70	35 / 0.37	72 / 2.03	5.5 / 0.09	0.0 / 0.00	0.97	31		484	37	274	0	USGS
W. Wagoner Dom. and Irr. Well	3S/2E-17N1	2-26-57	66	803	7.9	23 / 1.15	11 / 0.90	145 / 6.31	1.1 / 0.03	0 / 0.00	329 / 5.39	19 / 0.40	85 / 2.40	0.1 / 0.00	0.2 / 0.01	1.7	20		468	75	101	0	DWR
		5-2-57	--	855	--			161 / 7.00					93 / 2.62			2.4				80	90		USGS
		10-17-57	--		--			167 / 7.26					103 / 2.90	0.3 / 0.00		2.7				81	83		USGS
Lambert Domestic Well	3S/2E-18B1	2-27-58	60	597	7.0	34 / 1.70	42 / 3.45	27 / 1.17	2.5 / 0.06	0 / 0.00	256 / 4.20	36 / 0.75	37 / 1.04	14 / 0.23	0.1 / 0.01	0.37	17		336	18	259	0	DWR
F. A. Wagner Irr. and Dom. Well	3S/2E-20K1	2-27-57	68	645	7.5	33 / 1.65	21 / 1.73	78 / 3.39	2.3 / 0.06	0 / 0.00	316 / 5.18	23 / 0.48	44 / 1.24	0.2 / 0.00	0.2 / 0.01	0.16	22		379	50	169	0	DWR
		3-29-57	--	638	--			82 / 3.57					45 / 1.27			0.00				51	172		USGS
		10-17-57	--	652	--			81 / 3.52					49 / 1.38	0.3 / 0.00		0.00				51	169		USGS
A. A. Kirkman Irrigation Well	3S/2E-22E1	5-2-57	--	866	--			66 / 2.87					94 / 2.65			0.22				30	335		USGS
		6-24-57	65		--								129 / 3.64	15 / 0.24				NO_2 0.06					DWR
		11-1-57	--	855	--			68 / 2.96					111 / 3.13	15 / 0.24		0.07				32	311		USGS

a Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^6), and Nitrate (NO_2).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by [c]
	MDB&M					LIVERMORE VALLEY (2-10) (Cont.)																	
A. A. Kirkman Domestic Well	3S/2E-22E2	2-27-57	62	1240	6.5	55 / 2.74	62 / 5.10	92 / 4.00	1.3 / 0.03	0 / 0.00	232 / 3.80	32 / 0.67	246 / 6.94	27 / 0.44	0.2 / 0.01	0.11	41		671	34	393	202	DWR
		5-22-57	67	--	--								304 / 8.57	35 / 0.57				NO_2 0.00					DWR
Dalmazzo Dom. and Irr. Well	3S/2E-23C2	5-21-57	65	--	--								161 / 4.54	20 / 0.32				NO_2 0.00					DWR
		6-24-57	64	--	--								210 / 5.92	33 / 0.53				NO_2 0.00					DWR
R. E. Stambaugh Domestic Well	3S/2E-23D1	2-27-57	62	863	6.9	29 / 1.45	66 / 5.43	43 / 1.87	0.7 / 0.02	0 / 0.00	220 / 3.61	65 / 1.35	98 / 2.76	53 / 0.85	0.1 / 0.01	0.72	45		509	21	345	164	DWR
B. G. Wood Dom. and Irr. Well	3S/2E-29D1	3-28-57	--	629	--			53 / 2.31					53 / 1.49			0.43				35	215		USGS
		10-17-57	--	720	--			88 / 3.83					82 / 2.31	3.2 / 0.05		0.34							USGS
Helen Slattery Dom. and Irr. Well	3S/2E-29F1	4-30-57	64	876	7.1	67 / 3.34	39 / 3.22	60 / 2.61	2.1 / 0.05	0 / 0.00	293 / 4.80	69 / 1.44	92 / 2.59	13 / 0.21	0.1 / 0.00	0.37	23	Fe 0.00; Al 0.00; As 0.00; Cu 0.05; Pb 0.00; Mn 0.00; Zn 0.04; Cr^6 0.00	510	28	328	88	USGS
		5-21-57	59	759	7.5	63 / 3.14	26 / 2.11	58 / 2.52	1.8 / 0.05	0 / 0.00	322 / 5.28	61 / 1.27	45 / 1.27	0.4 / 0.01	0.0 / 0.00	0.44	26	NO_2 0.00	440	32	263	0	DWR
		6-24-57	72	933	6.9	52 / 2.59	50 / 4.14	60 / 2.61	2.4 / 0.06	0 / 0.00	305 / 5.00	75 / 1.56	98 / 2.76	8.6 / 0.14	0.2	0.42	20	NO_2 0.00	517	28	337	67	DWR
Joe Amaral Stk. and Dom. Well	3S/3E-19C1	3-29-57	--	1510	--	256 / 11.14							201 / 5.67			6.5				69	248		USGS
		10-16-57	--	1550	8.3	30 / 1.50	42 / 3.45	250 / 10.88	3.2 / 0.08	15 / 0.50	502 / 8.23	83 / 1.73	205 / 5.78	1.8 / 0.03	0.3 / 0.02	6.5	31		915	68	248	0	USGS
E. B. and J. Nevin Stock Well	3S/1W-1G1	3-18-57	--	769	--			77 / 3.35					86 / 2.43			0.17					220		USGS
		10-16-57	--	836	--			74 / 3.22					85 / 2.40	0.3 / 0.00		0.18					270		USGS

a Determined by addition of constituents.
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Hexavalent Chromium (Cr^6), and Nitrate (NO_2).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					PAJARO VALLEY (3-2)																	
Rinaldi Bros. Irr. and Dom. Well	12S/1E-10J1	8-21-57	68	2530	7.6	149 / 7.44	117 / 9.62	151 / 6.57	4.8 / 0.12	0 / 0.00	199 / 3.26	101 / 2.10	664 / 18.72	1.3 / 0.02	0.4 / 0.02	0.08	20		1310	28	854	740	DWR
Roach Irr. and Dom. Well	12S/1E-14J1	8-22-57	65	367	7.6	20 / 1.00	18 / 1.52	24 / 1.04	1.6 / 0.04	0 / 0.00	131 / 2.15	15 / 0.31	25 / 0.71	21 / 0.34	0.2 / 0.01	0.06	35		224	29	126	19	DWR
E. L. Padden Domestic Well	12S/1E-23R1	8-13-57	64	577	7.3	28 / 1.40	29 / 2.36	45 / 1.96	13 / 0.33	0 / 0.00	264 / 4.33	44 / 0.92	31 / 0.87	0.9 / 0.01	0.3 / 0.02	0.05	25		346	32	188	0	DWR
R. Trafton Irr. and Dom. Well	12S/1E-24G1	8-13-57	66	523	7.5	40 / 2.00	31 / 2.56	27 / 1.17	3.7 / 0.09	0 / 0.00	274 / 4.49	33 / 0.69	22 / 0.62	0.8 / 0.01	0.1 / 0.01	0.10	36		329	20	228	4	DWR
Caseon Irrigation Well	12S/1E-24J2	8-13-57	66	933	7.4	75 / 3.74	52 / 4.29	37 / 1.61	2.5 / 0.06	0 / 0.00	292 / 4.79	56 / 1.17	132 / 3.72	0.6 / 0.01	0.3 / 0.02	0.15	29		529	17	402	162	DWR
C. McCollum Irrigation Well	12S/1E-25B2	8-12-57	72	475	7.2	23 / 1.15	22 / 1.85	43 / 1.87	3.0 / 0.08	0 / 0.00	209 / 3.43	52 / 1.08	17 / 0.48	0.1 / 0.00	0.2 / 0.01	0.08	25		288	38	150	0	DWR
T. C. Morley Irrigation Well	12S/1E-25C1	8-20-57	73	925	7.8	33 / 1.65	31 / 2.59	84 / 3.65	14 / 0.36	0 / 0.00	173 / 2.84	44 / 0.92	162 / 4.57	0.4 / 0.01	0.2 / 0.01	0.18	18		472	44	222	70	DWR
A. L. Waugaman Irrigation Well	12S/2E-7K1	8-13-57	62	483	7.2	50 / 2.50	22 / 1.80	20 / 0.87	2.6 / 0.07	0 / 0.00	245 / 4.02	36 / 0.75	16 / 0.45	1.1 / 0.02	0.3 / 0.02	0.08	34		302	17	215	9	DWR
Muramoto Irr. and Dom. Well	12S/2E-8P1	8-20-57	64	523	7.9	50 / 2.50	24 / 1.98	21 / 0.91	3.5 / 0.09	0 / 0.00	283 / 4.64	19 / 0.40	21 / 0.59	0.3 / 0.01	0.3 / 0.02	0.18	11		289	17	224	0	DWR
Barba Irrigation Well	12S/2E-10J2	8-19-57	62	895	7.6	41 / 2.05	61 / 4.98	59 / 2.57	2.7 / 0.07	0 / 0.00	374 / 6.12	74 / 1.54	71 / 2.00	0.1 / 0.00	0.2 / 0.01	0.50	34		527	27	352	45	DWR
O. O. Eaton Irrigation Well	12S/2E-12L1	8-15-57	62	1090	7.5	56 / 2.79	80 / 6.60	74 / 3.22	2.3 / 0.06	0 / 0.00	510 / 8.36	110 / 2.29	68 / 1.92	5.6 / 0.09	0.4 / 0.02	0.49	34		682	25	470	51	DWR
F. Kellog Irrigation Well	12S/2E-18J1	8-13-57	64	622	7.1	66 / 3.29	27 / 2.22	30 / 1.30	2.6 / 0.07	0 / 0.00	327 / 5.36	42 / 0.87	23 / 0.65	0.2 / 0.00	0.2 / 0.01	0.20	34		386	19	276	8	DWR
M. Williamson Irr. and Dom. Well	12S/2E-19M1	8-15-57	65	621	7.4	59 / 2.94	29 / 2.42	32 / 1.39	2.9 / 0.07	0 / 0.00	308 / 5.05	55 / 1.15	22 / 0.62	0.0 / 0.00	0.3 / 0.02	0.17	34		385	20	268	16	DWR
T. E. Trafton Irrigation Well	12S/2E-20N1	8-16-57	68	598	7.8	31 / 1.55	37 / 3.01	38 / 1.65	2.5 / 0.06	0 / 0.00	218 / 3.57	86 / 1.79	36 / 1.02	0.8 / 0.01	0.2 / 0.01	0.18	38		377	26	228	50	DWR
M. C. Miller Irrigation Well	12S/2E-29E1	8-16-57	68	584	7.9	41 / 2.05	31 / 2.55	37 / 1.61	2.8 / 0.07	0 / 0.00	238 / 3.90	68 / 1.42	35 / 0.99	0.4 / 0.01	0.4 / 0.02	0.15	47		380	26	230	35	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M					PAJARO VALLEY (3-2) (Cont.)																	
V. & E. Cray Irrigation Well	12S/2E-30F3	8-16-57	64	516	7.8	36 / 1.80	27 / 2.22	33 / 1.44	2.9 / 0.07	0 / 0.00	239 / 3.92	49 / 1.02	22 / 0.62	0.4 / 0.01	0.1 / 0.01	0.16	36		325	26	201	5	DWR
J. Fenaglio Irrigation Well	12S/2E-30L1	8-16-57	64	476	7.6	25 / 1.25	24 / 1.95	33 / 1.44	2.2 / 0.06	0 / 0.00	148 / 2.43	27 / 0.56	43 / 0.21	28 / 0.45	0.0 / 0.00	0.08	38		293	31	160	39	DWR
A. & E. Tottoni Irrigation Well	12S/2E-31A1	8-16-57	68	639	7.5	46 / 2.30	37 / 3.05	32 / 1.39	2.9 / 0.07	0 / 0.00	256 / 4.20	84 / 1.75	34 / 0.96	0.1 / 0.00	0.1 / 0.01	0.16	38		400	20	268	58	DWR
J. F. Morre Irrigation Well	12S/2E-31C1	8-16-57	65	382	7.5	18 / 0.90	13 / 1.06	31 / 1.35	2.1 / 0.05	0 / 0.00	79 / 1.29	10 / 0.21	50 / 1.41	29 / 0.47	0.1 / 0.01	0.06	43		235	40	98	34	DWR
Tomavaca Irrigation Well	12S/2E-31K1	8-16-57	64	829	7.7	52 / 2.59	39 / 3.22	50 / 2.18	4.0 / 0.10	0 / 0.00	192 / 3.15	63 / 1.31	128 / 3.61	4.0 / 0.06	0.2 / 0.01	0.24	39		473	27	291	133	DWR
G. Hurley Irrigation Well	12S/2E-32N1	8-16-57	68	624	7.9	43 / 2.15	36 / 3.00	40 / 1.74	2.5 / 0.06	0 / 0.00	292 / 4.79	49 / 1.02	40 / 1.13	1.7 / 0.03	0.2 / 0.01	0.29	41		398	25	258	18	DWR
L. Banovac Irrigation Well	12S/3E-7B1	8-20-57	61	1110	7.4	62 / 3.09	66 / 5.42	78 / 3.39	2.3 / 0.06	0 / 0.00	328 / 5.38	212 / 4.41	82 / 2.31	2.0 / 0.03	0.2 / 0.01	0.64	30		696	28	426	156	DWR
Tanimora Bros. Irrigation Well	12S/3E-9Q1	8-16-57	61	1530	7.3	126 / 6.29	67 / 5.50	123 / 5.35	2.9 / 0.07	0 / 0.00	553 / 9.06	169 / 3.52	152 / 4.29	1.5 / 0.02	0.4 / 0.02	1.4	23		938	31	590	137	DWR
J. Strucki Irrigation Well	13S/2E-6E3	8-16-57	68	1400	7.5	68 / 3.39	49 / 4.00	129 / 5.61	4.9 / 0.12	0 / 0.00	206 / 3.38	79 / 1.64	293 / 8.26	9.0 / 0.14	0.2 / 0.01	0.25	46		779	43	370	200	DWR
F. Capurro Irrigation Well	13S/2E-7B2	8-16-57	69	2900	7.2	147 / 7.34	129 / 10.62	205 / 8.92	4.8 / 0.12	0 / 0.00	152 / 2.49	113 / 2.35	793 / 22.36	12 / 0.19	0.0 / 0.00	0.27	44		1520	33	899	774	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					SALINAS VALLEY (3-4)																	
Monterey Bay Salt Co. Dom. and Ind. Well	13S/2E-7R1	7-1-57	75	828	8.5	14 / 0.70	9.0 / 0.74	154 / 6.70	4.2 / 0.11	12 / 0.40	220 / 3.61	92 / 1.92	84 / 2.37	0.5 / 0.01	0.2 / 0.01	0.22	53		531	81	72	0	USGS
M. Minhoto Irrigation Well	13S/2E-16E1	7-1-57	66	828	8.5	46 / 2.30	25 / 2.02	84 / 3.65	5.9 / 0.15	12 / 0.40	206 / 3.38	21 / 0.44	141 / 3.98	2.6 / 0.04	0.2 / 0.01	0.19	50		489	45	216	27	USGS
Delfino & Calcagno Irrigation Well	13S/2E-17H1	7-1-57	66	1160	8.5	62 / 3.09	34 / 2.83	115 / 5.00	9.6 / 0.25	10 / 0.33	232 / 3.80	19 / 0.40	235 / 6.63	3.9 / 0.06	0.3 / 0.02	0.00	49		652	45	296	89	USGS
T. Leonardini Irr. and Dom. Well	13S/2E-19R1	6-19-57	68	1150	8.2	70 / 3.49	37 / 3.07	99 / 4.31	4.2 / 0.11	0 / 0.00	214 / 3.51	19 / 0.40	236 / 6.66	2.4 / 0.04	0.2 / 0.01	0.00	46		619	39	328	153	USGS
Permanente Indutrial Well	13S/2E-20P1	7-1-57	67	682	8.1	26 / 1.30	11 / 0.94	97 / 4.22	4.0 / 0.10	0 / 0.00	182 / 2.98	3.8 / 0.08	120 / 3.38	0.7 / 0.01	0.2 / 0.01	0.21	49		396	67	112	0	USGS
Jennie Tate Irrigation Well	13S/2E-20R2	7-1-57	71	902	8.4	62 / 3.09	26 / 2.17	80 / 3.48	3.2 / 0.08	12 / 0.40	199 / 3.26	40 / 0.83	153 / 4.31	1.0 / 0.02	0.2 / 0.01	0.00	49		524	39	263	80	USGS
J. J. King Irrigation Well	13S/2E-30L1	7-2-57	71	974	8.4	38 / 1.90	10 / 0.86	144 / 6.26	5.6 / 0.14	6 / 0.20	259 / 4.25	32 / 0.67	166 / 4.68	1.7 / 0.03	0.2 / 0.01	0.20	46		577	68	138	0	USGS
J. J. King Irrigation Well	13S/2E-31D2	7-2-57	68	701	8.5	46 / 2.30	14 / 1.14	83 / 3.61	3.2 / 0.08	13 / 0.43	222 / 3.64	19 / 0.40	90 / 2.54	1.3 / 0.02	0.2 / 0.01	0.11	50		429	51	172	0	USGS
Molera Estate Domestic Well	13S/2E-31K2	7-2-57	69	594	8.1	40 / 2.00	13 / 1.09	66 / 2.87	3.2 / 0.08	0 / 0.00	236 / 3.87	9.6 / 0.20	68 / 1.92	1.1 / 0.02	0.1 / 0.01	0.13	41		358	48	155	0	USGS
E. Bellone Irrigation Well	13S/2E-31M2	7-17-57	64	818	8.2	42 / 2.10	17 / 1.38	104 / 4.52	3.8 / 0.10	0 / 0.00	228 / 3.74	25 / 0.52	128 / 3.61	1.1 / 0.02	0.1 / 0.01	0.13	43		476	56	174	0	USGS
E. Bellone, et al. Irrigation Well	13S/2E-31N2	6-19-57	72	1050	8.2	77 / 3.84	27 / 2.24	71 / 3.09	4.0 / 0.10	0 / 0.00	205 / 3.36	7.7 / 0.16	203 / 5.72	2.2 / 0.04	0.2 / 0.01	0.12	42		535	33	304	136	USGS
O. P. Overhouse Irrigation Well	13S/2E-32C1	7-2-57	69	495	8.2	29 / 1.45	13 / 1.07	53 / 2.31	2.8 / 0.07	0 / 0.00	179 / 2.93	17 / 0.35	58 / 1.64	0.6 / 0.01	0.2 / 0.01	0.08	45		307	47	126	0	USGS
Cooper Estate Irrigation Well	13S/2E-32J1	7-24-57	64	1940	8.0	155 / 7.73	66 / 5.39	104 / 4.52	14 / 0.36	0 / 0.00	148 / 2.43	61 / 1.27	495 / 13.96	21 / 0.34	2.0 / 0.11	0.00	43		1030	25	656	535	USGS
Molera Estate Irrigation Well	13S/2E-32N1	7-2-57	72	582	8.2	37 / 1.85	13 / 1.03	67 / 2.91	3.0 / 0.08	0 / 0.00	226 / 3.70	21 / 0.44	60 / 1.69	0.8 / 0.01	0.2 / 0.01	0.07	47		360	50	144	0	USGS
Dorothy V. Orcutt, et al. Irr. Well	13S/2E-33E1	7-2-57	65	676	8.4	54 / 2.69	17 / 1.39	55 / 2.39	3.5 / 0.09	8 / 0.27	192 / 3.15	31 / 0.65	93 / 2.62	2.7 / 0.04	0.4 / 0.02	0.00	43		402	36	204	33	USGS

a Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					SALINAS VALLEY(3-4) (Cont.)																	
Caterina Riscotti Irr. and Dom. Well	13S/2E-33R1	7-2-57	64	583	8.1	49 / 2.45	18 / 1.51	48 / 2.09	2.8 / 0.07	0 / 0.00	222 / 3.64	32 / 0.67	59 / 1.66	0.6 / 0.01	0.2 / 0.01	0.06	39		358	34	198	16	USGS
Molera Estate Irrigation Well	14S/2E-5R2	7-22-57	67	835	8.2	60 / 2.99	26 / 2.15	64 / 2.78	4.0 / 0.10	0 / 0.00	160 / 2.62	92 / 1.92	122 / 3.44	0.3 / 0.00	0.1 / 0.01	0.00	45		492	35	257	126	USGS
Mrs. Lottie Martin Irrigation Well	14S/2E-6Q1	7-2-57	72	590	8.4	34 / 1.70	15 / 1.22	73 / 3.18	3.0 / 0.08	4 / 0.13	214 / 3.51	28 / 0.58	61 / 1.72	1.2 / 0.02	0.3 / 0.02	0.08	50		375	51	146	0	USGS
E. Struve et al. Irrigation Well	14S/2E-6R2	7-17-57	73	550	8.4	34 / 1.70	10 / 0.82	66 / 2.87	3.1 / 0.08	6 / 0.20	202 / 3.31	19 / 0.40	55 / 1.55	1.9 / 0.03	0.2 / 0.01	0.00	46		340	52	126	0	USGS
Jacob Jefferson Irrigation Well	14S/2E-8M2	7-2-57	67	598	8.4	49 / 2.45	18 / 1.47	49 / 2.13	3.5 / 0.09	6 / 0.20	135 / 2.21	86 / 1.79	53 / 1.49	18 / 0.29	0.1 / 0.01	0.18	45		394	35	196	75	USGS
Dorothy V. Orcutt, et al. Irrigation Well	14S/2E-9K1	7-17-57	68	679	8.3	54 / 2.69	20 / 1.65	56 / 2.44	3.7 / 0.09	4 / 0.13	194 / 3.18	102 / 2.12	48 / 1.35	1.3 / 0.02	0.4 / 0.02	0.02	40		425	36	217	51	USGS
J. P. Rodgers Irr. and Dom. Well	14S/2E-11D1	7-2-57	66	487	8.5	47 / 2.35	15 / 1.27	36 / 1.57	2.3 / 0.06	12 / 0.40	214 / 3.51	13 / 0.27	42 / 1.18	1.3 / 0.02	0.1 / 0.01	0.00	45		319	30	181	0	USGS
E. C. Eaton Irrigation Well	14S/2E-12Q1	6-19-57	68	506	8.5	54 / 2.69	13 / 1.07	34 / 1.48	2.4 / 0.06	10 / 0.33	224 / 3.67	3.8 / 0.08	39 / 1.10	2.4 / 0.04	0.1 / 0.01	0.00	31		300	28	188	0	USGS
L. A. Wilder Domestic Well	14S/2E-14N1	7-2-57	70	640	8.2	53 / 2.64	17 / 1.36	54 / 2.35	3.8 / 0.10	0 / 0.00	214 / 3.51	53 / 1.10	63 / 1.78	2.1 / 0.03	0.2 / 0.01	0.07	43		394	36	200	25	USGS
Monterey County Bank Irr. and Dom. Well	14S/2E-15L1	7-2-57	59	698	8.3	62 / 3.09	19 / 1.59	57 / 2.48	3.8 / 0.10	7 / 0.23	201 / 3.29	104 / 2.17	52 / 1.47	0.0 / 0.00	0.2 / 0.01	0.17	32		436	34	234	58	USGS
J. G. Armstrong Co. Irrigation Well	14S/2E-18D1	7-2-57	64	1130	8.0	99 / 4.94	33 / 2.70	81 / 3.52	4.7 / 0.12	0 / 0.00	233 / 3.82	154 / 3.21	148 / 4.17	3.6 / 0.06	0.2 / 0.01	0.19	39		678	31	382	191	USGS
A. H. Bordgee Irrigation Well	14S/2E-23J1	7-3-57	70	824	8.1	72 / 3.59	24 / 1.99	66 / 2.87	4.7 / 0.12	0 / 0.00	209 / 3.43	127 / 2.64	89 / 2.51	2.4 / 0.04	0.2 / 0.01	0.14	48		536	33	279	108	USGS
M. T. DeSerpa Irrigation Well	14S/2E-24E1	7-3-57	70	565	8.5	45 / 2.25	15 / 1.23	50 / 2.18	3.2 / 0.08	12 / 0.40	182 / 2.98	36 / 0.75	58 / 1.64	2.9 / 0.05	0.1 / 0.01	0.13	48		359	38	174	5	USGS
M. T. DeSerpa Irrigation Well	14S/2E-25B1	7-3-57	65	1140	8.0	82 / 4.09	41 / 3.35	88 / 3.83	4.4 / 0.11	0 / 0.00	277 / 4.54	119 / 2.48	151 / 4.26	13 / 0.21	0.2 / 0.01	0.08	40		675	34	372	145	USGS
Irr. and Dom. Well	14S/2E-26A1	7-3-57	66	1000	8.1	77 / 3.84	33 / 2.72	76 / 3.31	4.6 / 0.12	0 / 0.00	175 / 2.87	142 / 2.96	134 / 3.78	2.3 / 0.04	0.2 / 0.01	0.17	46		601	33	328	184	USGS
Irrigation Well	14S/3E-30B1	7-3-57	69	739	8.0	57 / 2.84	24 / 1.96	55 / 2.39	3.3 / 0.08	0 / 0.00	214 / 3.51	31 / 0.65	100 / 2.82	2.1 / 0.03	0.2 / 0.01	0.00	47		425	33	240	65	USGS

a Determined by addition of constituents
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (No)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					SALINAS VALLEY(3-4) (Cont.)																	
Annie Lanini Irrigation Well	14S/3E-30E1	7-3-57	67	1370	8.0	66 / 3.29	51 / 4.23	133 / 5.79	5.6 / 0.14	0 / 0.00	211 / 3.46	157 / 3.27	234 / 6.60	8.7 / 0.14	0.2 / 0.01	0.32	42		802	43	376	203	USGS
Irrigation Well	14S/3E-30F1	7-3-57	64	1360	7.8	73 / 3.64	48 / 3.96	127 / 5.52	5.0 / 0.13	0 / 0.00	342 / 5.61	81 / 1.69	216 / 6.09	12 / 0.19	0.2 / 0.01	0.04	40		770	42	380	100	USGS
James P. Dolan Irrigation Well	15S/2E-1A1	7-3-57	65	1640	7.9	132 / 6.59	70 / 5.73	119 / 5.18	6.9 / 0.18	0 / 0.00	166 / 2.72	449 / 9.35	185 / 5.22	1.7 / 0.03	0.2 / 0.01	0.43	47		1090	29	616	480	USGS
Lee Jacks Irrigation Well	15S/2E-2Q1	7-3-57	64	877	8.0	62 / 3.09	45 / 3.71	60 / 2.61	4.2 / 0.11	0 / 0.00	220 / 3.61	167 / 3.48	74 / 2.09	0.1 / 0.00	0.1 / 0.01	0.11	48		569	27	340	160	USGS
David P. McFadden et al. Irrigation Well	15S/3E-4L1	7-5-57	68	1510	7.8	93 / 4.64	61 / 5.04	136 / 5.92	6.4 / 0.16	0 / 0.00	266 / 4.36	354 / 7.37	130 / 3.67	17 / 0.27	0.2 / 0.01	0.46	46		974	38	484	266	USGS
Irrigation Well	15S/3E-5Q4	7-3-57	64	2150	7.8	138 / 6.89	72 / 5.95	233 / 10.14	8.0 / 0.20	0 / 0.00	298 / 4.88	542 / 11.28	238 / 6.71	1.2 / 0.02	0.1 / 0.01	0.56	40		1420	44	642	398	USGS
F. Giottinini Dom. and Irr. Well	15S/3E-7D1	7-30-57	64	1330	8.0	136 / 6.79	51 / 4.17	77 / 3.35	4.9 / 0.13	0 / 0.00	318 / 5.21	288 / 6.00	116 / 3.27	0.4 / 0.01	0.2 / 0.01	0.03	38		869	23	548	287	USGS
Laura G. Foeter Irrigation Well	15S/3E-8N1	7-3-57	64	902	8.0	64 / 3.19	39 / 3.21	69 / 3.00	4.5 / 0.12	0 / 0.00	210 / 3.44	221 / 4.60	60 / 1.69	0.1 / 0.00	0.2 / 0.01	0.21	47		608	32	320	148	USGS
Spreckels Sugar Co. Irrigation Well	15S/3E-16M1	7-3-57	64	805	8.2	51 / 2.54	45 / 3.70	47 / 2.04	3.7 / 0.09	0 / 0.00	180 / 2.95	161 / 3.35	66 / 1.86	1.1 / 0.02	0.2 / 0.01	0.10	48		512	24	312	164	USGS
J. Violini Irrigation Well	15S/3E-17P1	7-3-57	68	878	8.2	34 / 1.70	45 / 3.74	82 / 3.57	5.9 / 0.15	0 / 0.00	352 / 5.77	42 / 0.87	96 / 2.71	1.5 / 0.02	0.1 / 0.01	0.13	53		533	39	272	0	USGS
K. R. Nutting Irrigation Well	16S/4E-24A1	6-25-57	65	1550	8.0	132 / 6.59	63 / 5.21	121 / 5.26	4.2 / 0.11	0 / 0.00	295 / 4.84	388 / 8.08	116 / 3.27	34 / 0.55	0.2 / 0.01	0.43	39		1040	31	590	348	USGS
J. C. Twiseelman Irrigation Well	16S/4E-25K1	6-26-57	64	1310	8.0	89 / 4.44	60 / 4.92	110 / 4.78	5.2 / 0.13	0 / 0.00	270 / 4.43	357 / 7.43	92 / 2.59	0.7 / 0.01	0.2 / 0.01	0.29	42		889	34	468	247	USGS
Irrigation Well	17S/6E-27K1	6-24-57	65	1330	8.1	98 / 4.89	59 / 4.87	115 / 5.00	4.2 / 0.11	0 / 0.00	224 / 3.67	361 / 7.52	130 / 3.67	4.6 / 0.07	0.2 / 0.01	0.35	39		921	34	488	304	USGS
Mart Baker Irrigation Well	17S/6E-35F1	6-21-57	64	1490	8.2	115 / 5.74	62 / 5.06	128 / 5.57	4.4 / 0.11	0 / 0.00	277 / 4.54	407 / 8.47	105 / 2.96	1.6 / 0.03	0.2 / 0.01	0.67	46		1010	34	540	313	USGS
L. M. and V. Jacks Irrigation Well	18S/6E-1E1	6-21-57	64	1000	8.2	95 / 4.74	26 / 2.14	92 / 4.00	5.0 / 0.13	0 / 0.00	263 / 4.31	219 / 4.56	60 / 1.69	8.0 / 0.13	0.1 / 0.01	0.35	40		675	36	344	128	USGS
L. Jacks Irrigation Well	18S/6E-2N1	6-18-57	61	1130	7.9	131 / 6.54	36 / 2.98	62 / 2.70	5.6 / 0.14	0 / 0.00	233 / 3.82	280 / 5.83	67 / 1.89	42 / 0.68	0.1 / 0.01	0.04	38		777	22	476	285	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDR&M							CARMEL VALLEY (3-7)															
E. and W. Hatton Irrigation Well	16S/1E-18F1	8-29-57	62	899	—			72 / 3.13					103 / 2.90			0.13				34	298		USGS
B. Odello Irrigation Well	16S/1W-13R1	8-29-57	61	683	--			34 / 1.48					40 / 1.13			0.15				28	187		USGS
	SBB&M							SANTA MARIA RIVER VALLEY (3-12)															
J. S. Calderon et al Irrigation well	9N/33W-2A1	11-21-57	--	1805	7.2	163 / 8.15	94 / 7.75	110 / 4.79	3.8 / 0.10	0 / 0.00	329 / 5.40	638 / 13.28	82 / 2.30	5.8 / 0.09	0.3 / 0.02	0.0	36		1394	24	795	525	DWR
Grisinghor and Signorelli Irrigation well	10N/34W-6A1	11-21-57	--	1740	7.8	188 / 9.40	91 / 7.50	70 / 3.04	2.9 / 0.08	0 / 0.00	293 / 4.80	592 / 12.32	73 / 2.05	43 / 0.69	0.3 / 0.02	0.0	26		1361	15	845	605	DWR
J. J. O'Leary Irrigation, Domestic and stock well	10N/34W-16R1	11-21-57	--	1920	7.5	179 / 8.95	101 / 8.30	98 / 4.27	3.5 / 0.90	0 / 0.00	241 / 3.95	726 / 15.12	76 / 2.15	31 / 0.49	0.4 / 0.02	0.15	28		1476	20	863	665	DWR
Union Sugar Co. Irrigation well	10N/35W-4C1	11-21-57	--	1710	7.5	175 / 8.75	88 / 7.25	84 / 3.66	3.9 / 0.10	0 / 0.00	201 / 3.30	709 / 14.76	66 / 1.85	7.4 / 0.12	0.0 / 0.00	0.17	27		1350	19	800	635	DWR
M. J. Ellis Irrigation and Domestic well	10N/35W-7F1	8-29-57	62	1635	7.6	164 / 8.23	76 / 6.24	84 / 3.66	3.2 / 0.08	0 / 0.00	260 / 4.26	542 / 11.29	91 / 2.56	4.9 / 0.08	0.10 / 0.01	0.65	21		1142	20	724	511	TERM
		11-21-57	--	1470	7.6	141 / 7.05	87 / 7.15	71 / 3.07	3.1 / 0.08	0 / 0.00	162 / 2.65	553 / 11.51	89 / 2.51	3.7 / 0.06	0.0 / 0.00	0.06	37		1232	18	710	577	DWR
Union Sugar Co. Irrigation well	10N/35W-9N2	11-21-57	--	1160	7.5	100 / 5.00	57 / 4.70	64 / 2.80	2.5 / 0.07	0 / 0.00	162 / 2.65	415 / 8.63	51 / 1.45	4.5 / 0.07	0.1 / 0.01	0.13	35		864	22	485	352	DWR
Agnes F. King Domestic, Stock and Irrigation well	10N/35W-16M1	11-21-57	--	2578	7.6	280 / 13.95	108 / 8.90	201 / 8.75	3.8 / 0.10	0 / 0.00	333 / 5.45	1091 / 22.71	140 / 3.95	16 / 0.25	0.2 / 0.01	0.17	35		2198	28	1143	870	DWR
Agnes F. King Irrigation well	10N/35W-21C1	11-21-57	--	1640	7.4	141 / 7.05	73 / 6.00	124 / 5.40	2.8 / 0.07	0 / 0.00	308 / 5.05	430 / 8.95	133 / 3.75	87 / 1.40	0.2 / 0.01	0.04	36		1187	29	653	400	DWR
Union Sugar Co. Domestic and Irrigation well	11N/35W-18M1	11-21-57	--	1327	7.8	128 / 6.40	61 / 5.05	75 / 3.27	3.7 / 0.09	0 / 0.00	201 / 3.30	507 / 10.55	50 / 1.40	4.2 / 0.06	0.1 / 0.01	0.06	27		1010	22	573	408	DWR
Oscar Ferrari Domestic and Irrigation well	11N/35W-27Q1	8-29-57	64	1135	8.0	113 / 5.65	48 / 3.92	59 / 2.56	2.7 / 0.07	0 / 0.00	222 / 3.64	365 / 7.60	40 / 1.13	5.5 / 0.09	0.2 / 0.01	0.80	21		799	21	478	297	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	SBB&M					CUYAMA VALLEY (3-13)																	
Apache School Domestic well	7N/24W-13C2	9-27-57	—	1920	7.9	236 / 11.80	113 / 9.30	75 / 3.27	3.1 / 0.08	0 / 0.00	174 / 2.85	1037 / 21.59	18 / 0.50	3.5 / 0.06	0.7 / 0.04	0.13	12		1715	13	1055	912	DWR
U. S. Government Forest Service Domestic well	9N/24W-19F1	9-27-57	—	1841	8.0	248 / 12.40	98 / 8.10	64 / 2.79	3.1 / 0.08	0 / 0.00	177 / 2.90	965 / 20.09	21 / 0.60	12.6 / 0.20	0.7 / 0.04	0.05	18		1646	19	1025	880	DWR
E. H. Mettler Domestic well	10N/25W-22E1	9-27-57	—	2005	7.6	258 / 12.85	105 / 8.65	77 / 3.35	3.6 / 0.09	0 / 0.00	146 / 2.40	1067 / 22.21	18 / 0.50	23.6 / 0.38	0.7 / 0.04	0.05	20		1776	13	1075	955	DWR
H. Russell-Cuyama Ranch-Not in use	10N/26W-9R2	9-27-57	—	2079	7.4	271 / 13.50	78 / 6.40	130 / 5.67	5.2 / 0.13	0 / 0.00	122 / 2.00	1111 / 23.14	37 / 1.05	37.6 / 0.61	0.4 / 0.02	0.08	23		1874	22	995	895	DWR
Stanley Germain Domestic and Irrigation well	10N/26W-21Q1	9-27-57	—	987	7.3	46 / 2.30	16 / 1.35	147 / 6.38	3.4 / 0.09	0 / 0.00	104 / 1.70	389 / 8.09	20 / 0.55	4.7 / 0.08	0.0 / 0.00	0.10	14		698	63	183	98	DWR
Walt Smith Domestic and Irrigation well	10N/27W-11C1	9-27-57	—	4055	7.4	461 / 23.00	255 / 21.00	316 / 13.75	5.6 / 0.14	0 / 0.00	336 / 5.50	2433 / 50.66	76 / 2.15	19.2 / 0.31	0.3 / 0.02	0.24	30		4062	24	2200	1925	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Mangonese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M					OXNARD PLAIN PRESSURE AREA (4-4.01)																	
Ed Murdhardt Irrigation and Domestic well	1N/21W-30A1	4-4-57	--	1085	7.8					0 0.00	296 4.85		43 1.21								363	120	TERM
		11-26-57	--	890	7.8	99 4.94	30 2.47	86 3.74	4.5 0.12	0 0.00	292 4.78	257 5.36	44 1.24	2.0 0.03	0.3 0.02	0.60	30		720	33	371	132	DWR
Point Mugu Game Reserve Irrigation	1N/21W-31A1	11-7-57	--	1165	7.7	118 5.90	36 3.00	94 4.08	3.5 0.09	0 0.00	262 4.30	353 7.35	40 1.13	4.4 0.07	0.3 0.02	0.80	23		910	31	445	230	TERM
Ventura Co. Game Reserve-Pond well	1N/21W-31L2	11-8-57	--	1080	7.7	93 4.65	32 2.65	91 3.96	5.1 0.13	0 0.00	278 4.55	254 5.29	55 1.55	0.0 0.00	0.2 0.12	0.75	25		805	35	365	137	TERM
City of Oxnard Municipal well	1N/22W-3F4	4-4-57	68	1665	7.7	172 8.60	65 5.33	118 5.13	5.1 0.13	0 0.00	307 5.03	583 12.15	62 1.75	19 0.31	0.7 0.04	0.48	22		1306	27	697	445	TERM
		10-16-57	66	1406	7.5						272 4.45		57 1.61								555	332	TERM
D. McGrath Estate Co. Domestic and Stock well	1N/22W-7D1	5-16-57	--	1255	8.1	116 5.80	43 3.52	97 4.22	3.9 0.10	0 0.00	259 4.25	391 8.15	43 1.21	0.0 0.00	1.7 0.09	0.17	25		920	31	466	253	TERM
		12-11-57	--	1066	7.6					0 0.00	239 3.92		45 1.27								469	273	DWR
J. A. Alvarez Jr. Irrigation and Domestic well	1N/22W-8K3	4-4-57	66	1360	7.4	121 6.05	48 3.93	109 4.74	5.1 0.13	0 0.00	262 4.30	439 9.15	55 1.55	0.0 0.00	0.7 0.04	0.53	20		1000	32	499	284	TERM
		11-26-57	--	1100	7.9					0 0.00	257 4.22		46 1.30								492	281	DWR
Ignatius Friedrich Domestic and Irrigation well	1N/22W-9Q3	4-4-57	--	1390	7.8	126 6.30	46 3.77	102 4.43	3.1 0.08	0 0.00	262 4.30	416 8.67	44 1.24	0.0 0.00	0.8 0.04	0.46	25		950	30	504	289	TERM
		11-26-57	--	1100	7.6					0 0.00	257 4.22		46 1.30								490	279	DWR
City of Oxnard Municipal well	1N/22W-15B3	11-26-57	68	1118	7.7					0 0.00	253 4.14		50 1.41								511	304	DWR
Hollywood Beach Resort-Domestic well	1N/22W-18E1	12-11-57	--	1087	7.7					0 0.00	242 3.96		48 1.35								490	292	DWR
Hollywood By the Sea Mutual Water Co. Municipal well	1N/22W-19B3	4-4-57	--	1200	8.1	113 5.65	39 3.20	87 3.78	3.9 0.10	0 0.00	250 4.10	356 7.42	43 1.21	0.0 0.00	2.0 0.10	0.55	26		850	30	443	238	TERM
		11-26-57	--	968	7.6	134 6.69	26 2.14	78 3.39	4.1 0.11	0 0.00	243 3.98	345 7.18	44 1.24	0.0 0.00	0.7 0.04	0.66	25		815	27	442	243	DWR

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories, Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER
1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (No)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by [c]
	SBB&M					OXNARD PLAIN PRESSURE AREA(4-4.01) (Cont.)																	
U. S. Navy Domestic well	1N/22W-20B1	3-29-57	—	1235	7.7	116 / 5.80	38 / 3.11	85 / 3.69	4.7 / 0.12	0 / 0.00	256 / 4.20	345 / 7.19	40 / 1.13	0.0 / 0.00	0.6 / 0.03	0.52	29		850	28	446	236	TERM
Silver Strand Mutual Water Co. Municipal well	1N/22W-20E2	4-4-57	--	1250	7.9	130 / 6.50	35 / 2.87	102 / 4.44	7.0 / 0.18	0 / 0.00	257 / 4.22	409 / 8.52	45 / 1.27	1.0 / 0.02	0.5 / 0.03	0.36	23		950	32	469	258	TERM
		11-26-57	--	1060	7.7	134 / 6.69	32 / 2.63	84 / 3.65	4.5 / 0.12	0 / 0.00	248 / 4.06	377 / 7.86	44 / 1.24	1.0 / 0.02	0.5 / 0.03	0.56	25		990	28	466	263	DWR
U. S. Navy Observation well	1N/22W-20R1 NCBC #2 8-V-21	4-5-57	—	22200	6.9	1371 / 68.40	518 / 42.60	2541 / 110.50	29 / 0.75	0 / 0.00	232 / 3.80	123 / 23.39	6896 / 194.50	13 / 0.21	1.3 / 0.07	1.10			15788	50	5550	5360	DWR
City of Port Hueneme Municipal well	1N/22W-21B2 Owner's #5	5-17-57	—	1185	7.7	116 / 5.80	38 / 3.11	91 / 3.96	4.7 / 0.12	0 / 0.00	256 / 4.19	367 / 7.65	40 / 1.13	0.0 / 0.00	1.5 / 0.08	0.32	27		860	30	446	236	TERM
K. L. Varnau Domestic, Irrigation and Stock well	1N/22W-23C1	5-14-57	68	1210	7.3	114 / 5.70	41 / 3.36	95 / 4.13	5.1 / 0.13	0 / 0.00	253 / 4.13	394 / 8.21	45 / 1.27	0.0 / 0.00	1.0 / 0.05	0.48	23		920	31	453	246	TERM
		11-26-57	—	1045	7.6					0 / 0.00	243 / 3.98		45 / 1.27								464	265	DWR
S. R. Pidduck Irrigation and Domestic well	1N/22W-26A1	12-11-57	—	1029	7.7					0 / 0.00	249 / 4.08		46 / 1.30								464	260	DWR
R. E. Lawn Domestic and Irrigation well	1N/22W-28A2 9-V-71	12-11-57	--	1131	7.1	114 / 5.70	38 / 3.10	101 / 4.41	3.6 / 0.09	0 / 0.00	262 / 4.30	342 / 7.11	71 / 2.00	3.2 / 0.05	0.6 / 0.03	0.42	30		811	33	440	225	DWR
Kalof Pulp and Paper Co. Industrial and Domestic well	1N/22W-28H2	3-29-57	—	1260	7.8	116 / 5.80	39 / 3.20	90 / 3.91	3.9 / 0.10	0 / 0.00	268 / 4.40	353 / 7.35	43 / 1.21	0.0 / 0.00	0.7 / 0.04	0.47	26		880	30	450	230	TERM
		11-26-57	64	1040	7.5	128 / 6.39	38 / 3.12	84 / 3.65	3.8 / 0.10	0 / 0.00	253 / 4.14	369 / 7.68	51 / 1.44	0.5 / 0.01	0.6 / 0.03	0.68	30		875	27	476	269	DWR
Brightview Motel Domestic well	2N/22W-27M2	4-4-57	—	1915	7.8	188 / 9.40	72 / 5.90	126 / 5.48	2.7 / 0.07	0 / 0.00	320 / 5.25	643 / 13.40	73 / 2.06	29 / 0.47	0.8 / 0.04	0.53	22		1390	26	765	502	TERM
		10-16-57	—	1655	7.5						314 / 5.15		70 / 1.97								655	397	TERM
Frank McGrata Estate Domestic well	2N/23W-25Q1	4-4-57	—	1485	7.7	127 / 6.35	41 / 3.39	126 / 5.48	5.1 / 0.13	0 / 0.00	259 / 4.25	478 / 9.96	58 / 1.63	2.1 / 0.03	0.6 / 0.03	0.32	23		1010	36	487	274	TERM
		10-16-57	—	1410	7.4						253 / 4.15		60 / 1.69								485	277	TERM

a Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S.Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories, Inc. (TERM), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M					WEST COAST BASIN-AREA OF SEA-WATER INTRUSION (4-11.02)																	
City of Manhattan Beach Municipal well	3S/14W-30H2 721-K	2-11-57	—	855	7.7	57 / 2.88	17 / 1.39	80 / 3.48	5.5 / 0.14	0 / 0.00	244 / 4.00	35 / 0.73	108 / 3.04	0.0 / 0.00	0.6 / 0.03	0.0	23		528	44	212	12	TERM
		12-10-57	68	745	8.4	58 / 2.90	17 / 1.40	68 / 2.95	5.0 / 0.13	3.0 / 0.10	235 / 3.85	29 / 0.61	106 / 3.00	4.8 / 0.08	0.6 / 0.03	0.15	31						
California Water Service Co. Municipal well	3S/14W-31A1 712-A	3-12-57	—	910	7.9	50 / 2.50	16 / 1.31	117 / 5.09	6.3 / 0.16	0 / 0.00	189 / 3.10	134 / 2.79	113 / 3.18	0.0 / 0.00	0.6 / 0.03	0.06	16		600	56	191	36	TERM
City of El Segundo Municipal well	3S/15W-12G1 1297-E	12-20-57	72	2010	7.8	157 / 7.85	57 / 4.65	134 / 5.84	7.3 / 0.19	0 / 0.00	333 / 5.45	28 / 0.58	452 / 12.75	7.6 / 0.12	0.8 / 0.04	0.04	24		1257	32	625	352	DWR
City of El Segundo Municipal well	3S/15W-12H3 1307-D	2-11-57	72	1105	7.7	69 / 3.45	30 / 2.46	99 / 4.30	6.6 / 0.17	0 / 0.00	384 / 6.30	26 / 0.54	130 / 3.67	0.0 / 0.00	0.2 / 0.01	0.0	26						
		12-20-57	72	882	7.8	64 / 3.18	23 / 1.88	101 / 4.40	6.6 / 0.17	0 / 0.00	415 / 6.80	9.0 / 0.19	85 / 2.39	2.5 / 0.04	0.2 / 0.01	0.0	49		703	46	253	0	TERM
Standard Oil Co. of California Industrial well	3S/15W-13R2 1309-E	3-7-57	--	1950	7.6	134 / 6.70	61 / 5.00	124 / 5.39	11.3 / 0.29	0 / 0.00	287 / 4.70	85 / 1.77	368 / 10.37	0.0 / 0.00	0.3 / 0.02	0.02	7		1100	31	585	350	TERM
Dominguez Water Co. Municipal well	4S/14W-8F1 725-F	6-11-57	--	3330	7.8	311 / 15.50	11 / 9.05	357 *		0 / 0.00	176 / 2.88	36 / 0.74	1004 / 28.30	0.0 / 0.00					1900[a]	54	1228	1084	LACFCD

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), Los Angeles County Flood Control District Laboratories (LACFCD), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).
* Na plus K determined together.

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by[c]
	SBB&M					WEST COAST BASIN-TORRANCE AREA (4-11.02)																	
Ray Beauley Domestic well	4S/13W-6K1 814	1-18-57	70	1045	7.5					0 / 0.00	247 / 4.05		110 / 3.10								388	185	TERM
		5-7-57	69	1220	7.2	118 / 5.89	28 / 2.30	115*		0 / 0.00	250 / 4.10	279 / 5.87	116 / 3.27						907[a]		410	205	LACFCD
		9-17-57	69	1245	7.4	125 / 6.25	32 / 2.60	115*		0 / 0.00	254 / 4.17	287 / 6.03	121 / 3.42	15 / 0.24					947[a]		443	235	LACFCD
George Branning Domestic and stock well	4S/13W-6Q1 814-A	1-18-57	66	1700	7.3					0 / 0.00	345 / 5.65		205 / 5.77								643	360	TERM
		12-20-57	--	1730	8.0	123 / 6.15	43 / 3.50	212 / 9.20	6.0 / 0.15	0 / 0.00	217 / 3.55	501 / 10.43	165 / 4.65	5.0 / 0.08	0.0 / 0.00	0.29	25		1170	48	483	305	DWR
Chanslor-Canfield Oil Co. Industrial well	4S/14W-9Q1 746	3-13-57	--	690	7.6	38 / 1.90	14 / 1.15	80 / 3.48	4.7 / 0.12	0 / 0.00	265 / 4.35	2 / 0.04	80 / 2.25	0.0 / 0.00	0.3 / 0.02	0.18	24		450	52	153		TERM
		10-20-57	--	614	8.2	36 / 1.80	16 / 1.35	69 / 3.02	4.7 / 0.12	0 / 0.00	265 / 4.35	0.0 / 0.00	70 / 1.97	0.0 / 0.00	0.2 / 0.01	0.05	17		461	48	158		TERM
Edward Sidebotham Industrial well	4S/14W-35E1 271-A	3-11-57	--	1170	7.5					0 / 0.00	374 / 6.13		143 / 4.03								295		TERM
Chandlers Palos Verdes Sand Gravel Co. Industrial well	4S/14W-35F2 281-C	1-21-57	60	1445	7.5	94 / 4.70	33 / 2.70	163 / 7.09	6.6 / 0.17	0 / 0.00	372 / 6.10	158 / 3.29	178 / 5.01	0.0 / 0.00	0.3 / 0.02	0.0	30		908	48	370	65	TERM
		3-11-57	--	1560	7.3	94 / 4.70	34 / 2.79	166 / 7.22	6.3 / 0.16	0 / 0.00	375 / 6.15	165 / 3.44	180 / 5.07	0.0 / 0.00	0.7 / 0.04	0.44	27		1005	48	375	67	TERM

a Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc. (TERM), Los Angeles County Flood Control District Laboratories (LACFCD), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).
* Na plus K determined together

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M					WEST COAST BASIN-ATHENS AREA (4-11.02)																	
Maria N. Ishida Domestic and Irrigation well	3S/13W-29G3 831	12-19-57	--	889	7.8	89 / 4.45	19 / 1.55	88 / 3.81	6.9 / 0.18	0 / 0.00	320 / 5.25	112 / 2.34	71 / 2.00	2.5 / 0.04	0.8 / 0.04	0.03	23		553	38	300	37	DWR
Mrs. Diestel Domestic and Irrigation well	3S/13W-31F1 813-H	2-18-57	60	2080	7.3	170 / 8.50	58 / 4.75	143 / 6.22	5.5 / 0.14	0 / 0.00	331 / 5.42	184 / 3.83	342 / 9.65	16 / 0.26	0.0 / 0.00	0.10	24		1300	32	663	392	TERM
Jim Scander Irrigation well	3S/14W-24A1 1409-D	2-15-57	68	680	8.0					0 / 0.00	171 / 2.80		112 / 3.15								145	5	TERM
Walter H. Belton Irrigation well	3S/14W-24Q2 801-B	2-14-57	56	2145	7.8	116 / 5.80	57 / 4.67	247 / 10.74	5.9 / 0.15	0 / 0.00	567 / 9.30	107 / 2.23	230 / 6.48	190 / 3.06	0.0 / 0.00	0.0 / 0.00	24		1484	50	524	59	TERM
Wilbur Hornetra Domestic and Irrigation well	3S/14W-25K4 802	4-3-57	66	630	7.7	58 / 2.90	13 / 1.07	50 / 2.18	3.1 / 0.08	0 / 0.00	232 / 3.80	40 / 0.83	53 / 1.49	0.0 / 0.00	0.4 / 0.02	0.10	22		422	35	199	9	TERM
L. A. County Park Irrigation well	3S/14W-27C1 761-	2-18-57	66	1285	7.4	98 / 4.90	27 / 2.21	97 / 4.22	5.1 / 0.13	0 / 0.00	223 / 3.65	66 / 1.38	218 / 6.14	0.0 / 0.00	0.0 / 0.00	0.0	19		800	37	356	173	TERM
Moneta Water Co. Municipal well	3S/14W-35M5 773-K	1-23-57	70	790	8.1	42 / 2.15	15 / 1.23	86 / 3.74	2.7 / 0.70	0 / 0.00	281 / 4.60	43 / 0.90	48 / 1.35	16 / 0.26	0.6 / 0.03	0.0	25		408	52	169		TERM

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	SBB&M					CENTRAL COASTAL PLAIN PRESSURE AREA (4-11.03)																	
Los Angeles Dept. Municipal well	2S/13W-32C2 1434-J	10-31-57	72	577	7.9	63 / 3.15	13 / 1.08	39 / 1.7	3.1 / 0.08	0 / 0.00	189 / 3.10	76 / 1.58	20 / 0.56		0.3		22		425	28	212	57	LAWP
City of Southgate Municipal well	3S/13W-2B1	12-10-57	67	742	7.6	98 / 4.89	21 / 1.73	47 / 2.04	3.8 / 0.09	0 / 0.00	257 / 4.22	133 / 2.78	62 / 1.75	0.5 / 0.01	0.4 / 0.02	0.12	30		545	23	331	120	DWR
						LOS ANGELES FOREBAY AREA (4-11.04)																	
City of Vernon Municipal well	2S/13W-10P4 2769-G	5-2-57	—	685	8.1					0 / 0.00	226 / 3.70		38 / 1.07								223	38	TERM
		12-20-57	65	576	7.4	71 / 3.54	17 / 1.40	42 / 1.83	4.5 / 0.11	0 / 0.00	242 / 3.96	91 / 0.90	35 / 0.99	2.5 / 0.04	0.5 / 0.03	0.10	30		415	26	247	49	DWR
Swift and Co. Industrial well	2S/13W-10R1	5-2-57	68	930	8.1	94 / 4.70	29 / 2.38	61 / 2.65	3.5 / 0.09	0 / 0.00	288 / 4.72	130 / 2.71	85 / 2.39	0.0 / 0.00	1.4 / 0.07	0.12	32		636	27	354	118	TERM
		9-12-57	64	951	8.2	105 / 5.24	27 / 2.22	61 / 2.65	4.1 / 0.10	0 / 0.00	284 / 4.66	140 / 2.91	90 / 2.54	1.5 / 0.02	1.1 / 0.06	0.43	30		620	26	373	140	DWR
City of Vernon Municipal well	2S/13W-14H1	5-2-57	68	640	8.1					0 / 0.00	236 / 3.87		33 / 0.93								220	26	TERM
		12-10-57	68	623	6.8	64 / 3.20	16 / 1.30	40 / 1.74	2.9 / 0.07	0 / 0.00	217 / 3.55	88 / 1.83	32 / 0.90	4.8 / 0.08	0.0 / 0.00	0.15	23		387	28	225	48	DWR
Pioneer Paper Co. Industrial and Domestic well	2S/13W-15N3	5-2-57	68	680	8.0	66 / 3.30	19 / 1.56	45 / 1.96	3.9 / 0.10	0 / 0.00	242 / 3.96	96 / 2.00	35 / 0.99	2.0 / 0.03	0.7 / 0.04	0.04	19		468	28	243	45	TERM
		12-10-57	—	557	7.8					0 / 0.00	229 / 3.76		36 / 1.02								239	51	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), Los Angeles Department of Water and Power (LAWP), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million (Calcium (Ca) / equivalents per million)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	SBB&M					MAIN SAN GABRIEL BASIN (4-13.01)																	
Baldwin Park Co. Water District Domestic and Irrigation well	1S/10W-7A1 4239-A	6-14-57	--	541	7.6					0 / 0.00	154 / 2.52		78 / 2.20								263	137	DWR
		12-26-57	--	685	8.1	78 / 3.90	27 / 2.25	12 / 0.54	3.9 / 0.10	0 / 0.00	244 / 4.00	41 / 0.85	53 / 1.48	16 / 0.26	0.2 / 0.01	0.0	9		475	8	308	108	TERM
City of Glendora Municipal and Irrigation well	1S/10W-10C1 4289	6-14-57	66	630	8.3	70 / 3.50	23 / 1.88	20 / 0.89	3.1 / 0.08	0 / 0.00	245 / 4.02	41 / 0.85	18 / 0.51	47 / 0.76	0.2 / 0.01	0.10	19		440	14	269	68	TERM
Walnut Placer Mutual Water Co. Irrigation well	1S/10W-19N1 3032	6-14-57	--	1195	8.1	91 / 4.55	32 / 2.62	107 / 4.65	5.5 / 0.14	0 / 0.00	162 / 2.65	317 / 6.60	105 / 2.96	4.1 / 0.07	0.7 / 0.04	0.04	13		806	39	359	226	TERM
		12-26-57	63	1113	8.1					0 / 0.00	168 / 2.75		98 / 2.76								360	222	TERM
City of Monrovia Municipal well	1S/11W-2G1 4198	6-14-57	--	426	8.2					14 / 0.48	198 / 3.24		16 / 0.45								227	41	DWR
		12-26-57	62	583	8.1	68 / 3.38	21 / 1.72	15 / 0.66	1.6 / 0.40	0 / 0.00	256 / 4.20	22 / 0.46	13 / 0.36	41 / 0.66	0.4 / 0.02	0.0	12		438	11	255	45	TERM
Southern California Water Co. Municipal well	1S/11W-10F1	12-26-57	--	388	8.0	41 / 2.05	17 / 1.40	14 / 0.60	1.6 / 0.04	0 / 0.00	198 / 3.25	13 / 0.27	10 / 0.28	12 / 0.19	0.8 / 0.04	0.0	12		285	14	173	10	TERM
San Gabriel Valley Water Co. Municipal and Industrial well	1S/11W-26K1	12-19-57	--	362	7.7	60 / 2.99	10 / 0.82	19 / 0.83	4.2 / 0.11	0 / 0.00	217 / 3.55	25 / 0.53	16 / 0.45	18.5 / 0.30	0.3 / 0.02	0.04	25		280	17	191	13	DWR
Pedro Mireles Irrigation and Domestic well	1S/11W-32C1	1-23-57	--	728	7.2	99 / 4.94	23 / 1.89	17 / 0.74	3.7 / 0.09	0 / 0.00	311 / 5.10	64 / 1.33	25 / 0.71	25.7 / 0.41	0.6 / 0.03	0.07	20		514	10	342	87	DWR
		6-14-57	--	745	7.9	98 / 4.90	24 / 1.97	17 / 0.74	2.3 / 0.06	0 / 0.00	326 / 5.34	46 / 0.96	26 / 0.73	23 / 0.37	0.6 / 0.03	0.10	18		530	10	344	77	TERM
		12-26-57	--	749	7.8					0 / 0.00	330 / 5.40		30 / 0.85								350	80	TERM
Ed Alluis Domestic well	1S/11W-33P1 2956-D	6-14-57	--	480	7.8					0 / 0.00	193 / 3.16		18 / 0.51								212	54	DWR
		12-26-57	--	532	7.8	58 / 2.90	26 / 2.10	16 / 0.69	3.5 / 0.09	0 / 0.00	256 / 4.20	43 / 0.90	30 / 0.85	2.1 / 0.03	0.10 / 0.01	0.0	18		358	12	250	40	TERM

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratoriee Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M					MAIN SAN GABRIEL BASIN (4-13.01) (Cont.)																	
Scudder Food Products Domestic and Irrigation well	1S/11W-35L1	1-22-57	--	328	8.3	5 / 0.25	1 / 0.08	74 / 3.22	0.7 / 0.02	5 / 0.16	114 / 1.87	37 / 0.78	22 / 0.62	1.0 / 0.02	1.0 / 0.05	0.08	30		215	90	17		DWR
E. A. Watwood Domestic and Irrigation well	1S/11W-35N1	1-22-57	—	676	7.6	47 / 2.35	15 / 1.23	86 / 3.74	2.3 / 0.06	0 / 0.00	236 / 3.87	88 / 1.84	51 / 1.44	16 / 0.26	0.8 / 0.04	0.04	30		430	51	179		DWR
Southern California Water Co. Domestic well	1S/12W-25B11	8-13-57	73	488	8.1	42 / 2.10	14 / 1.15	48 / 2.09	1.5 / 0.04	0 / 0.00	223 / 3.66	18 / 0.37	42 / 1.18	12 / 0.19	0.5 / 0.03	0.04	30		285	39	163		DWR

C-44

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M										UPPER LAKE VALLEY (5-13)												
C. B. Flick Domestic Well	15N/9W-31P1	7-31-57	68	155	--			15 0.65					4.0 0.11			0.00				38			USGS
Antone Santos Domestic Well	16N/9W-31L3	7-30-57	59	220	--			10 0.44					4.0 0.11			0.00				19			USGS
											KELSEYVILLE VALLEY (5-15)												
Ross Field Irrigation Well	13N/9W-2L2	7-31-57	60	536	--			11 0.48					13 0.37			0.00				8			USGS
C. Benson Irrigation Well	13N/9W-3B1	7-31-57	60	399	--			6.9 0.30					7.0 0.20			0.00				7			USGS
C. W. Coppenter Irrigation Well	13N/9W-4P1	7-31-57	62	386	7.2	18 0.90	37 3.06	9.0 0.39	1.5 0.04	0 0.00	264 4.33	3.8 0.08	3.0 0.08	0.0 0.00	0.1 0.01	0.00	60		262	9	198	0	USGS
Davidson Irrigation Well	13N/9W-8C1	7-31-57	61	423	7.3	33 1.65	31 2.55	9.9 0.43	1.0 0.03	0 0.00	248 4.06	19 0.40	6.0 0.17	12 0.19	0.1 0.01	0.28	24		258	9	210	7	USGS
J. & M. Klier Irrigation Well	13N/9W-10P2	7-31-57	60	465	7.7	14 0.70	51 4.18	8.8 0.38	1.5 0.04	0 0.00	298 4.88	5.8 0.12	12 0.34	4.5 0.07	0.1 0.01	0.03	46		291	7	244	0	USGS
Lincoln Wright Irrigation Well	13N/9W-12M1	7-31-57	62	459	--			18 0.78					18 0.51			0.34				16			USGS
Merritt Fraser Irrigation Well	13N/9W-16D1	7-31-57	61	1010	7.1	40 2.00	107 8.80	25 1.09	3.6 0.09	0 0.00	727 11.92	12 0.25	10 0.28	0.3 0.00	0.1 0.01	0.60	88		645	9	540	0	USGS
Merritt Fraser Domestic Well	13N/9W-16D2	7-31-57	62	288	--			8.6 0.37					6.0 0.17			0.00				12			USGS
Overington Domestic Well	14N/9W-6A2	7-31-57	--	39	6.7	1.6 0.08	1.5 0.12	3.0 0.13	1.4 0.04	0 0.00	18 0.30	1.9 0.04	1.5 0.04	0.0 0.00	0.0 0.00	0.00	13		33	35	10	0	USGS
Irene D. Morrison Irrigation Well	14N/9W-32J2	7-31-57	62	473	7.0	26 1.30	43 3.54	11 0.48	1.5 0.04	0 0.00	322 5.28	1.9 0.04	5.0 0.14	0.0 0.00	0.1 0.01	0.00	70		318	9	242	0	USGS

a Determined by addition of constituents.
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER
1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					SUTTER COUNTY (5-21a)																	
A. J. Richter Domestic Well	12N/2E-3N1	10-21-57	—	1020	8.0	24 / 1.20	17 / 1.40	173 / 7.53	2.2 / 0.06	0 / 0.00	242 / 3.97	3.8 / 0.08	208 / 5.87	16 / 0.26	0.2 / 0.01	0.75	15		579	74	130	0	USGS
C. A. Richter Domestic Well	12N/2E-9B2	10-31-57	—	531	8.4	18 / 0.90	8.8 / 0.72	85 / 3.70	3.9 / 0.10	6 / 0.20	236 / 3.87	9.6 / 0.20	43 / 1.21	0.4 / 0.01	0.1 / 0.01	0.46	17		308	68	81	0	USGS
Garner Domestic Well	12N/2E-11N1	7-25-57	70	1260	7.4	26 / 1.30	14 / 1.16	225 / 9.79	4.6 / 0.12	0 / 0.00	271 / 4.44	0.0 / 0.00	279 / 7.87	1.6 / 0.02	0.1 / 0.01	0.73	50		734	80	123	0	DWR
Domestic Well	12N/2E-14B1	7-25-57	66	4210	7.1	131 / 6.54	120 / 9.90	556 / 24.19	2.1 / 0.05	0 / 0.00	196 / 3.21	0.0 / 0.00	1330 / 37.51	0.9 / 0.01	0.0 / 0.00	0.72	20		2260	60	823	662	DWR
L. A. Wright Domestic Well	12N/2E-16R1	7-25-57	68	841	7.7	19 / 0.95	13 / 1.11	162 / 7.05	1.6 / 0.04	0 / 0.00	444 / 7.28	16 / 0.33	53 / 1.49	0.3 / 0.00	0.5 / 0.03	0.47	46		530	77	103	0	DWR
Haun Domestic Well	12N/2E-23Q1	7-26-57	68	962	7.1	16 / 0.80	8.3 / 0.68	181 / 7.87	3.2 / 0.08	0 / 0.00	273 / 4.47	0.0 / 0.00	173 / 4.88	0.6 / 0.01	0.0 / 0.00	0.63	46		563	83	74	0	DWR
Mrs. Dorothy E.Mullen Domestic Well	12N/2E-26A1	10-31-57	—	1100	8.2	20 / 1.00	16 / 1.30	193 / 8.40	2.8 / 0.07	0 / 0.00	284 / 4.65	0.0 / 0.00	220 / 6.20	12 / 0.19	0.2 / 0.01	0.81	40		645	78	115	0	USGS
Roy Rogers Domestic Well	13N/3E-10M2	7-25-57	68	954	7.9	66 / 3.29	56 / 4.60	36 / 1.57	1.6 / 0.04	0 / 0.00	355 / 5.82	2.0 / 0.04	128 / 3.61	0.5 / 0.01	0.0 / 0.00	0.07	22		487	17	395	104	DWR
Edward Silva Irrigation Well	13N/3E-11Q3	7-26-57	64	1680	7.3	89 / 4.44	95 / 7.83	94 / 4.09	3.2 / 0.08	0 / 0.00	395 / 6.47	58 / 1.21	300 / 8.46	14 / 0.22	0.3 / 0.02	0.23	34		882	25	614	290	DWR
Boccardo Ranch Irrigation Well	13N/3E-13C1	11-9-57	—	351	8.1	8.8 / 0.44	3.4 / 0.28	64 / 2.78	2.0 / 0.05	0 / 0.00	170 / 2.79	0.0 / 0.00	30 / 0.85	0.9 / 0.01	0.2 / 0.01	0.42	38		232	78	36	0	USGS
H. J. Cheim Irrigation Well	13N/3E-14R1	7-27-57	66	1900	7.1	91 / 4.54	59 / 4.89	172 / 7.48	5.8 / 0.15	0 / 0.00	234 / 3.84	6.6 / 0.14	456 / 12.86	0.6 / 0.01	0.1 / 0.01	0.83	30		937	44	472	280	DWR
Lalsinghrai Irrigation Well	13N/3E-16R1	11-9-57	—	1570	8.0	76 / 3.79	83 / 6.81	106 / 4.61	3.4 / 0.09	0 / 0.00	160 / 2.62	0.0 / 0.00	450 / 12.69	31 / 0.50	0.3 / 0.02	0.21	34		863	30	530	399	USGS
Don Rouse Irrigation Well	13N/3E-23B1	7-26-57	63	3320	7.1	265 / 13.22	187 / 15.35	136 / 5.92	7.5 / 0.19	0 / 0.00	344 / 5.64	25 / 0.52	983 / 27.72	1.2 / 0.02	0.0 / 0.00	0.08	31		1800	17	1430	1147	DWR
C. M. Owen Irrigation Well	13N/4E-21A1	7-26-57	62	565	6.8	51 / 2.54	32 / 2.61	31 / 1.35	1.8 / 0.05	0 / 0.00	226 / 3.70	125 / 2.60	11 / 0.31	0.0 / 0.00	0.0 / 0.00	0.10	31		394	21	258	73	DWR
J. E. Jopson Irrigation Well	13N/4E-23Q1	7-26-57	68	226	6.8	14 / 0.70	5.8 / 0.48	23 / 1.00	1.8 / 0.05	0 / 0.00	104 / 1.70	3.0 / 0.06	17 / 0.48	0.0 / 0.00	0.0 / 0.00	0.10	42		158	45	59	0	DWR
C. F. Nelson Irr. and Dom. Well	13N/5E-7R3	7-26-57	67	484	6.6	39 / 1.95	15 / 1.21	37 / 1.61	1.8 / 0.05	0 / 0.00	173 / 2.84	55 / 1.15	28 / 0.79	5.6 / 0.09	0.0 / 0.00	0.08	67		333	33	158	16	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S.Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by [c]
	MDB&M					SUTTER COUNTY (5-21a) (Cont.)																	
E. J. Gallegher Irrigation Well	13N/5E-19R2	7-26-57	65	231	6.5	17 / 0.85	9.1 / 0.75	15 / 0.65	1.0 / 0.03	0 / 0.00	100 / 1.64	3.0 / 0.06	18 / 0.51	1.7 / 0.03	0.0 / 0.00	0.06	72		186	29	80	0	DWR
Frye Brothers Domestic Well	14N/1E-1A1	7-25-57	70	579	7.6	35 / 1.75	45 / 3.68	23 / 1.00	0.9 / 0.02	0 / 0.00	346 / 5.67	19 / 0.40	15 / 0.42	1.4 / 0.02	0.3 / 0.02	0.11	50		360	16	272	0	DWR
S. A. McKeehan Domestic Well	14N/1E-2A1	7-25-57	68	574	7.5	52 / 2.59	41 / 3.34	14 / 0.61	1.0 / 0.03	0 / 0.00	340 / 5.57	17 / 0.35	23 / 0.65	0.3 / 0.00	0.2 / 0.01	0.06	51		367	9	297	19	DWR
Basant Singh Irrigation Well	14N/3E-3C2	11-9-57	--	820	8.4	46 / 2.30	50 / 4.14	49 / 2.13	3.7 / 0.09	8 / 0.27	290 / 4.75	21 / 0.44	114 / 3.21	0.6 / 0.01	0.3 / 0.02	0.27	33		469	25	322	71	USGS
Channah S. Srah Irrigation Well	14N/3E-5A3	7-24-57	64	878	7.2	68 / 3.39	54 / 4.40	50 / 2.18	1.9 / 0.05	0 / 0.00	456 / 7.47	55 / 1.15	48 / 1.35	0.0 / 0.00	0.0 / 0.00	0.05	22		523	22	390	26	DWR
Littlejohn Irrigation Well	14N/3E-14E2	7-25-57	62	263	6.9	21 / 1.05	17 / 1.37	8.2 / 0.36	1.8 / 0.05	0 / 0.00	153 / 2.51	8.7 / 0.18	2.7 / 0.08	0.0 / 0.00	0.5 / 0.03	0.00	31		166	13	121	0	DWR
James A. Blevins Domestic Well	14N/3E-15H1	7-25-57	73	867	7.2	45 / 2.25	33 / 2.73	91 / 3.96	3.4 / 0.09	0 / 0.00	291 / 4.77	19 / 0.40	135 / 3.81	0.0 / 0.00	0.2 / 0.01	0.26	25		495	44	249	11	DWR
F. J. Beet Irr. and Dom. Well	14N/3E-16B2	7-24-57	64	1320	6.9	87 / 4.34	70 / 5.77	60 / 2.61	3.9 / 0.10	0 / 0.00	306 / 5.02	44 / 0.92	244 / 6.88	0.0 / 0.00	0.2 / 0.01	0.05	27		686	20	506	255	DWR
Rennie Mahon Irrigation Well	14N/3E-18A2	7-24-57	64	675	7.0	50 / 2.50	39 / 3.23	42 / 1.83	2.3 / 0.06	0 / 0.00	382 / 6.26	20 / 0.42	31 / 0.87	0.0 / 0.00	0.0 / 0.00	0.00	25		397	24	287	0	DWR
C. L. Duncan Irrigation Well	14N/3E-23M2	7-25-57	60	439	7.1	33 / 1.65	25 / 2.07	23 / 1.00	1.8 / 0.05	0 / 0.00	235 / 3.85	32 / 0.67	7.6 / 0.21	0.0 / 0.00	0.3 / 0.02	0.11	31		270	21	186	0	DWR
L. Ott Irrigation Well	14N/3E-28D1	7-24-57	67	1050	7.1	72 / 3.59	55 / 4.56	57 / 2.48	1.7 / 0.04	0 / 0.00	312 / 5.11	33 / 0.69	171 / 4.82	0.0 / 0.00	0.0 / 0.00	0.00	17		560	23	408	152	DWR
J. Serger Domestic Well	14N/3E-28R1	7-24-57	66	1390	6.9	92 / 4.59	85 / 6.96	66 / 2.87	3.7 / 0.09	0 / 0.00	356 / 5.83	4.5 / 0.09	301 / 8.49	0.0 / 0.00	0.2 / 0.01	0.02	29		756	20	578	288	DWR
L. Ott Irrigation Well	14N/3E-31B1	7-24-57	68	908	7.0	54 / 2.69	46 / 3.76	77 / 3.35	3.4 / 0.09	0 / 0.00	395 / 6.47	17 / 0.35	105 / 2.96	0.0 / 0.00	0.3 / 0.02	0.17	25		522	34	323	0	DWR
E. L. Carothers Domestic Well	15N/2E-26D2	7-24-57	68	474	7.0	34 / 1.70	27 / 2.22	24 / 1.04	0.8 / 0.02	0 / 0.00	246 / 4.03	8.9 / 0.19	24 / 0.68	10 / 0.16	0.0 / 0.00	0.00	39		289	21	196	0	DWR
A. Eager Irrigation Well	15N/3E-4C2	7-24-57	66	833	7.1	67 / 3.34	60 / 4.97	27 / 1.17	2.2 / 0.06	0 / 0.00	447 / 7.33	55 / 1.15	18 / 0.51	31 / 0.50	0.0 / 0.00	0.00	49		529	12	416	0	DWR
Robert Paillex Irrigation Well	15N/3E-26M1	7-25-57	62	336	7.0	9.4 / 0.47	6.7 / 0.55	56 / 2.44	2.7 / 0.07	0 / 0.00	166 / 2.72	0.0 / 0.00	28 / 0.79	0.2 / 0.00	0.2 / 0.01	0.38	49		235	69	51	0	DWR
W. A. Glentzer Irrigation Well	15N/3E-29G1	7-24-57	66	756	7.1	58 / 2.89	50 / 4.12	31 / 1.35	1.6 / 0.04	0 / 0.00	432 / 7.08	22 / 0.46	20 / 0.56	17 / 0.28	0.4 / 0.02	0.03	49		461	16	351	0	DWR

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr)

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M							YOLO COUNTY-CAPAY VALLEY (5-21b)															
Jim Monroe Irrigation Well	10N/2W-14A1	7-30-57	68	529	--			34 / 1.48					35 / 0.99			1.4				26			USGS
John Peterson Dom. and Irr. Well	10N/2W-16L1	7-30-57	63	555	--			44 / 1.91					25 / 0.70			1.6				31			USGS
Howard Stock Well	10N/2W-17J1	10-18-57	--	705	8.2	12 / 0.60	8.8 / 0.72	136 / 5.92	2.8 / 0.07	0 / 0.00	319 / 5.23	40 / 0.83	48 / 1.35	2.6 / 0.04	0.4 / 0.02	0.61	29		437	81	66	0	USGS
Myrtle Bowles Domestic Well	10N/2W-18F1	7-30-57	70	1380	--			190 / 8.26					191 / 5.39			0.90				13	295		USGS
W. W. McClary Dom. and Irr. Well	10N/2W-18F2	7-30-57	76	1720	7.0	136 / 6.79	68 / 5.61	151 / 6.57	2.0 / 0.05	0 / 0.00	543 / 8.90	215 / 4.48	205 / 5.78	7.4 / 0.12	0.1 / 0.01	1.3	33		1090	35	620	175	USGS
V. White Domestic Well	10N/2W-18L1	7-30-57	66	1360	7.5	104 / 5.19	44 / 3.61	137 / 5.96	2.0 / 0.05	0 / 0.00	456 / 7.47	163 / 3.39	135 / 3.81	6.8 / 0.11	0.2 / 0.01	1.2	23		841	40	440	66	USGS
C. A. Kutsuris Domestic Well	10N/2W-23A1	7-30-57	65	483	7.6	36 / 1.80	20 / 1.68	42 / 1.83	1.5 / 0.04	0 / 0.00	289 / 4.74	19 / 0.40	8.0 / 0.23	7.0 / 0.11	0.1 / 0.01	0.37	30		306	34	174	0	USGS
Richard Bloom Dom. and Irr. Well	11N/3W-9Q1	7-30-57	67	619	--			44 / 1.91					62 / 1.75			0.47				30	224		USGS
H. D. Everett Irrigation Well	11N/3W-10E1	7-30-57	68	587	7.2	49 / 2.45	19 / 1.59	47 / 2.04	1.3 / 0.03	0 / 0.00	210 / 3.44	60 / 1.25	49 / 1.38	4.7 / 0.08	0.1 / 0.01	0.74	27		361	33	202	30	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M					SACRAMENTO COUNTY (5-21c)																	
H. Alberg Irrigation Well	5N/5E-3F1	7-10-57	66	285	7.0	22 / 1.10	12 / 1.02	21 / 0.91	1.4 / 0.04	0 / 0.00	166 / 2.72	4.0 / 0.08	7.1 / 0.20	0.0 / 0.00	0.2 / 0.01	0.05	38		188	30	106	0	DWR
M. Perry Irrigation Well	7N/4E-4R1	7-8-57	59	182	6.9	15 / 0.75	9.1 / 0.75	7.7 / 0.34	2.3 / 0.06	0 / 0.00	99 / 1.62	2.6 / 0.05	5.7 / 0.161	0.6 / 0.01	0.1 / 0.01	0.03	30		122	18	75	0	DWR
State of California Domestic Well	7N/5E-7C1	7-9-57	66	230	6.4	18 / 0.09	8.3 / 0.68	16 / 0.70	2.2 / 0.06	0 / 0.00	121 / 1.98	1.2 / 0.03	10 / 0.28	0.0 / 0.00	0.2 / 0.01	0.00	55		170	30	79	0	DWR
Hans Sutter Irrigation Well	7N/5E-32J2	7-9-57	70	316	6.4	25 / 1.25	14 / 1.13	20 / 0.87	1.9 / 0.05	0 / 0.00	170 / 2.79	3.6 / 0.08	9.9 / 0.28	5.3 / 0.09	0.1 / 0.01	0.00	53		217	26	119	0	DWR
Lee School District Domestic Well	7N/7E-27P1	7-10-57	78	259	6.8	17 / 0.85	10 / 0.83	20 / 0.87	1.3 / 0.03	0 / 0.00	122 / 2.00	0.8 / 0.17	15 / 0.42	6.2 / 0.10	0.4 / 0.02	0.02	51		182	34	84	0	DWR
Land Park Water Maintenance District Municipal Well	8N/4E-26D1	7-11-57	—	320	7.0	31 / 1.55	14 / 1.19	12 / 0.52	4.1 / 0.11	0 / 0.00	187 / 3.07	0.0 / 0.00	9.1 / 0.26	0.0 / 0.00	0.1 / 0.01	0.7	42		204	16	137	0	DWR
State of California Domestic Well	8N/5E-15H1	7-9-57	70	365	6.9	39 / 1.95	11 / 0.87	18 / 0.78	4.6 / 0.12	0 / 0.00	165 / 2.70	0.0 / 0.00	28 / 0.79	0.4 / 0.01	3.0 / 0.16	0.00	42		227	21	141	6	DWR
Haight Irrigation Well	8N/5E-24M1	7-9-57	67	175	6.5	16 / 0.80	5.8 / 0.48	9.8 / 0.43	1.6 / 0.04	0 / 0.00	84 / 1.38	3.8 / 0.08	6.0 / 0.17	4.5 / 0.07	0.1 / 0.01	0.00	33		122	24	64	0	DWR
Antone Amarel Irrigation Well	8N/5E-30N1	7-9-57	70	250	6.8	22 / 1.10	10 / 0.82	12 / 0.52	2.1 / 0.05	0 / 0.00	119 / 1.95	4.6 / 0.10	11 / 0.31	6.2 / 0.10	0.2 / 0.01	0.03	64		191	21	96	0	DWR
Citizens Utilities Co. Domestic Well	9N/5E-15N1	7-10-57	70	369	7.1	27 / 1.35	16 / 1.33	21 / 0.91	1.8 / 0.05	0 / 0.00	148 / 2.43	7.9 / 0.16	30 / 0.85	7.1 / 0.12	0.3 / 0.02	0.03	53		237	25	134	13	DWR
Citizens Utilities Co. Domestic Well	9N/5E-20L1	7-9-57	74	333	6.8	24 / 1.20	12 / 0.98	25 / 1.09	3.5 / 0.09	0 / 0.00	133 / 2.18	5.8 / 0.12	35 / 0.99	0.0 / 0.00	0.1 / 0.01	0.08	53		223	32	109	0	DWR
Citizens Utilities Co. Domestic Well	9N/5E-21C1	7-9-57	74	314	7.0	21 / 1.05	14 / 1.15	21 / 0.91	2.7 / 0.07	0 / 0.00	216 / 2.07	6.4 / 0.13	32 / 0.90	0.0 / 0.00	0.1 / 0.01	0.05	67		226	29	110	7	DWR
Citizens Utilities Co. Domestic Well	9N/5E-21E1	7-9-57	74	389	6.8	22 / 1.10	13 / 1.04	35 / 1.52	3.5 / 0.09	0 / 0.00	133 / 2.18	6.4 / 0.13	49 / 1.38	0.2 / 0.00	0.1 / 0.01	0.22	69		263	41	107	0	DWR
Citizens Utilities Co. Domestic Well	9N/5E-29L1	7-9-57	75	413	6.5	28 / 1.40	18 / 1.46	27 / 1.17	3.7 / 0.10	0 / 0.00	160 / 2.62	5.4 / 0.11	47 / 1.33	0.7 / 0.01	0.2 / 0.01	0.16	69		228	28	143	12	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER
1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M					SACRAMENTO COUNTY (5-21c) (Cont.)																	
G. L. Weister Domestic Well	9N/5E-32Q1	7-10-57	66	449	7.2	41 / 2.05	17 / 1.43	22 / 0.96	5.3 / 0.14	0 / 0.00	159 / 7.61	7.4 / 0.15	61 / 1.72	0.0 / 0.00	0.3 / 0.02	0.10	46		278	21	174	0	DWR
N. Koshell Domestic Well	9N/6E-6E1	7-12-57	67	248	6.4	18 / 0.90	9.5 / 0.78	15 / 0.65	0.9 / 0.02	0 / 0.00	90 / 1.48	0.0 / 0.00	28 / 0.79	2.1 / 0.03	0.4 / 0.02	0.04	67		185	28	84	10	DWR
O. A. Melby Domestic Well	9N/6E-19P1	7-8-57	72	219	6.9	18 / 0.90	8.0 / 0.66	14 / 0.61	1.5 / 0.04	0 / 0.00	102 / 1.67	2.8 / 0.06	11 / 0.31	6.2 / 0.10	0.3 / 0.12	0.00	77		189	28	78	0	DWR
J. W. Edwards Domestic Well	9N/6E-25H1	9-16-57	68	182	7.4	16 / 0.80	6.8 / 0.56	11 / 0.48	1.5 / 0.04	0 / 0.00	94 / 1.54	8.6 / 0.18	3.8 / 0.11	2.1 / 0.03	0.1 / 0.01	0.03	52	NH_4 0.0 / ClO_4 1	149	26	68	0	USGS
C. O. Kemper Domestic Well	9N/7E-15F1	7-11-57	76	349	6.2	30 / 1.50	20 / 1.66	12 / 0.52	1.2 / 0.03	0 / 0.00	169 / 2.77	9.9 / 0.21	18 / 0.51	8.8 / 0.14	0.1 / 0.01	0.04	44		227	14	158	20	DWR
Libby-McNeil & Libby Industrial Well	9N/7E-16P1	9-16-57	64	476	8.0	43 / 2.15	23 / 1.89	18 / 0.78	2.5 / 0.06	0 / 0.00	210 / 3.44	12 / 0.25	40 / 1.13	5.4 / 0.09	0.0 / 0.00	0.00	55	NH_4 0.0 / ClO_4 1	303	16	202	30	USGS
Capitol Dredging Co. Domestic Well	9N/7E-26H1	9-16-57	68	119	6.6	8.8 / 0.44	3.8 / 0.31	8.0 / 0.35	1.2 / 0.03	0 / 0.00	44 / 0.72	4.8 / 0.10	6.7 / 0.19	8.1 / 0.13	0.1 / 0.01	0.00	63		126	31	38	2	USGS
H. Collier Domestic Well	9N/7E-27Q1	9-16-57	65	232	7.1	14 / 0.70	11 / 0.87	17 / 0.74	0.9 / 0.02	0 / 0.00	102 / 1.67	13 / 0.27	9.3 / 0.26	4.6 / 0.07	0.1 / 0.01	0.00	54	NH_4 0.0 / ClO_4 1	175	32	78	0	USGS
Aerojet Corporation Industrial Well	9N/7E-28B1	9-16-57	67	185	7.5	14 / 0.70	8.0 / 0.66	12 / 0.52	1.8 / 0.05	0 / 0.00	98 / 1.61	1.0 / 0.02	5.8 / 0.16	5.0 / 0.08	0.1 / 0.01	0.00	72	NH_4 0.0 / ClO_4 1	169	27	68	0	USGS
Aerojet Corporation Industrial Well	9N/7E-28K1	9-16-57	67	244	7.4	23 / 1.15	8.8 / 0.72	14 / 0.61	3.0 / 0.08	0 / 0.00	140 / 2.29	2.9 / 0.06	8.0 / 0.23	0.2 / 0.00	0.1 / 0.01	0.00	72	NH_4 0.0 / ClO_4 1	202	24	94	0	USGS
J. A. Rodgers Domestic Well	9N/7E-32B1	9-16-57	66	116	7.2	8.2 / 0.41	5.5 / 0.45	6.2 / 0.27	0.8 / 0.02	0 / 0.00	55 / 0.90	1.9 / 0.04	4.0 / 0.11	5.9 / 0.10	0.0 / 0.00	0.00	54	NH_4 0.0 / ClO_4 1	116	23	43	0	USGS
Ben Petruci Irr. and Dom. Well	9N/7E-33E1	9-16-57	68	414	7.0	39 / 1.95	24 / 2.01	12 / 0.52	1.4 / 0.04	0 / 0.00	236 / 3.87	6.7 / 0.14	16 / 0.45	0.0 / 0.00	0.0 / 0.00	0.00	43	NH_4 0.0 / ClO_4 1	261	12	198	4	USGS
Westby Domestic Well	10N/4E-23A1	7-11-57	74	517	6.7	39 / 1.95	19 / 1.57	38 / 1.65	1.6 / 0.04	0 / 0.00	199 / 3.26	13 / 0.27	57 / 1.61	0.9 / 0.01	0.2 / 0.01	0.13	53		320	32	176	13	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr), Ammonium (NH_4); Perchlorate (ClO_4)

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million (equivalents per million)												Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)				Total ppm	N.C. ppm
	MDB&M					SAN JOAQUIN COUNTY (5-22a)																
California Water Service Co. Mun. Well	1N/6E-3H3	6-27-57	72	655	7.0	21 / 1.05	9.8 / 0.81	100 / 4.35	1.5 / 0.04	0 / 0.00	168 / 2.75	2.5 / 0.05	119 / 3.36	0.0 / 0.00	0.4 / 0.02	0.54	49		387	70	93	0
California Water Service Co. Mun. Well	1N/6E-4D1	6-27-57	72	416	7.3	8.4 / 0.42	3.6 / 0.30	103 / 4.48	1.4 / 0.04	0 / 0.00	210 / 3.44	1.3 / 0.03	64 / 1.80	0.3 / 0.00	0.0 / 0.00	0.62	58		344	85	36	0
		11-20-57	70	520	7.8	7.7 / 0.38	4.4 / 0.36	105 / 4.57	1.6 / 0.04	0 / 0.00	215 / 3.52	0.6 / 0.01	62 / 1.75	0.0 / 0.00	0.0 / 0.00	0.62	61		349	85	37	0
City of Stockton Irrigation Well	1N/6E-4J1	11-20-57	65	561	7.4	12 / 0.60	5.1 / 0.42	105 / 4.57	1.3 / 0.03	0 / 0.00	192 / 3.15	4.8 / 0.10	84 / 2.37	0.0 / 0.00	0.1 / 0.01	0.67	48		356	81	51	0
Union Ice Co. Industrial Well	1N/6E-10E2	6-27-57	74	923	7.6	28 / 1.40	10 / 0.82	152 / 6.61	1.1 / 0.03	0 / 0.00	187 / 3.06	14 / 0.29	189 / 5.33	0.3 / 0.00	0.4 / 0.02	0.49	37		524	75	111	0
		11-20-57	63	903	8.1	26 / 1.30	9.7 / 0.80	142 / 6.18	1.6 / 0.04	0 / 0.00	193 / 3.16	7.7 / 0.16	183 / 5.16	0.9 / 0.01	0.0 / 0.00	0.57	47		513	74	105	0
Fibreboard Products Co. Industrial Well	1N/6E-10P1	6-27-57	73	2230	6.7	106 / 5.29	50 / 4.10	357 / 15.53	4.9 / 0.13	0 / 0.00	129 / 2.11	24 / 0.50	770 / 21.71	1.6 / 0.03	0.1 / 0.01	0.72	67		1440	62	470	374
		11-20-57	73	2810	7.7	110 / 5.49	52 / 4.31	381 / 16.57	7.0 / 0.18	0 / 0.00	160 / 2.62	1.9 / 0.04	832 / 23.46	0.0 / 0.00	0.0 / 0.00	0.95	59		1520	62	490	359
Fibreboard Products Co. Industrial Well	1N/6E-10P2	6-27-57	73	1540	6.8	49 / 2.45	21 / 1.69	230 / 10.00	3.1 / 0.08	0 / 0.00	191 / 3.13	3.0 / 0.06	390 / 11.00	0.5 / 0.01	0.3 / 0.02	0.91	62		854	70	207	51
		11-20-57	73	1550	7.5	46 / 2.30	22 / 1.84	236 / 10.27	3.2 / 0.08	0 / 0.00	191 / 3.13	2.9 / 0.06	380 / 10.72	0.8 / 0.01	0.0 / 0.00	1.1	60		846	71	207	50
Fibreboard Products Co. Industrial Well	1N/6E-10P3	9-19-57	72	2580	7.9	137 / 6.84	54 / 4.46	269 / 11.70	6.4 / 0.16	0 / 0.00	167 / 2.74	1.0 / 0.02	726 / 20.47	0.5 / 0.01	0.0 / 0.00	0.88	56		1330	51	565	428
California Water Service Co. Mun. Well	1N/6E-14C1	6-28-57	68	563	7.1	50 / 2.50	18 / 1.44	48 / 2.09	1.9 / 0.05	0 / 0.00	149 / 2.44	11 / 0.23	119 / 3.36	0.0 / 0.00	0.2 / 0.01	0.03	34		355	34	197	75
California Water Service Co. Mun. Well	1N/6E-14C2	6-27-57	70	624	7.0	26 / 1.30	11 / 0.94	86 / 3.74	1.6 / 0.04	0 / 0.00	138 / 2.26	3.8 / 0.08	127 / 3.58	0.0 / 0.00	0.3 / 0.02	0.17	42		366	62	112	0
California Water Service Co. Mun. Well	1N/6E-14H1	6-27-57	72	421	7.8	7.5 / 0.37	3.7 / 0.31	85 / 3.70	1.1 / 0.03	0 / 0.00	188 / 3.08	0.3 / 0.01	43 / 1.21	0.1 / 0.00	0.3 / 0.02	0.57	60		294	84	34	0
Irrigation Well	1N/7E-11J1	8-12-57	66	239	6.9	18 / 0.90	9.2 / 0.76	17 / 0.74	3.7 / 0.09	0 / 0.00	126 / 2.07	9.6 / 0.20	9.0 / 0.25	1.7 / 0.03	0.2 / 0.01	0.80	69		200	30	83	0
Slang Irrigation Well	1N/9E-18G1	8-12-57	72	225	—			15 / 0.65					14 / 0.39			0.0				30	77	

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As) Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					SAN JOAQUIN COUNTY (5-22a) (Cont.)																	
Irrigation Well	2N/8E-10C1	8-12-57	62	278	6.8	28 / 1.40	11 / 0.88	12 / 0.52	3.1 / 0.08	0 / 0.00	149 / 2.44	12 / 0.25	5.0 / 0.14	3.6 / 0.06	0.2 / 0.01	0.87	56		205	18	114	0	USGS
Barbero Irr. and Dom. Well	3N/6E-27B1	8-12-57	71	425	6.8	27 / 1.35	10 / 0.85	52 / 2.26	2.1 / 0.05	0 / 0.00	223 / 3.65	17 / 0.35	5.5 / 0.16	20 / 0.32	0.2 / 0.01	0.89	62		307	50	110	0	USGS
S. Gaberoglis Irr. and Dom. Well	4N/7E-23B2	8-12-57	66	649	7.3	53 / 2.64	23 / 1.88	44 / 1.91	1.8 / 0.05	0 / 0.00	226 / 3.70	13 / 0.27	85 / 2.40	15 / 0.24	0.2 / 0.01	0.80	114		461	29	226	41	USGS
Bert Maurer Irrigation Well	1S/7E-2A1	9-16-57	--	394	8.3	32 / 1.60	15 / 1.20	18 / 0.78	9.2 / 0.24	0 / 0.00	146 / 2.39	15 / 0.31	40 / 1.13	2.2 / 0.04	0.4 / 0.02	0.10	34		238	20	140	0	DWR
Dert Maurer Irrigation Well	1S/7E-2A2	9-16-57	--	349	8.3	28 / 1.40	12 / 1.00	20 / 0.87	5.5 / 0.14	10 / 0.33	122 / 2.00	9.5 / 0.20	30 / 0.85	1.5 / 0.02	0.2 / 0.01	0.10	43		220	26	120	4	DWR
Irrigation Well	1S/7E-10A1	8-12-57	65	322	7.0	25 / 1.25	12 / 0.95	22 / 0.96	3.7 / 0.09	0 / 0.00	147 / 2.41	22 / 0.46	16 / 0.45	1.4 / 0.02	0.2 / 0.01	0.89	71		246	30	110	0	USGS
Dueina Domeetic Well	2S/4E-1P1	8-13-57	65	761	7.3	19 / 0.95	8.4 / 0.69	133 / 5.79	1.0 / 0.03	0 / 0.00	143 / 2.34	137 / 2.85	71 / 2.00	0.0 / 0.00	0.2 / 0.01	1.7	25		466	78	82	0	USGS
M. R. Furtado Domeetic Well	2S/4E-16A1	9-30-57	--	3320	7.0	210 / 10.48	112 / 9.18	292 / 12.70	2.0 / 0.05	0 / 0.00	265 / 4.34	394 / 8.20	688 / 19.40	18 / 0.29	0.4 / 0.02	1.0	44		1890	39	984	766	DWR
Art Boltzen Domeetic Well	2S/4E-28A1	8-28-57	--	2520	8.1	64 / 3.19	80 / 6.56	387 / 16.83	2.7 / 0.07	0 / 0.00	242 / 3.97	766 / 15.95	245 / 6.91	1.4 / 0.02	0.5 / 0.03	4.7	30		1700	63	488	289	DWR
Morrie Vierra Stock Well	2S/4E-33J1	8-28-57	--	3680	8.0	108 / 5.39	56 / 4.62	608 / 26.45	21 / 0.54	0 / 0.00	224 / 3.67	973 / 20.26	505 / 14.24	0.4 / 0.01	0.5 / 0.03	5.7	80	NH_4 2.1	2470	71	501	317	DWR
H. C. Jepson Irrigation Well	2S/4E-36P1	8-13-57	65	579	6.7	32 / 1.60	11 / 0.94	62 / 2.70	3.6 / 0.09	0 / 0.00	116 / 1.90	36 / 0.75	100 / 2.82	1.9 / 0.03	0.2 / 0.01	1.0	15		320	51	127	32	USGS
Shell Oil Co. Dom. and Irr. Well	2S/4E-36R2	8-29-57	--	1220	7.3	63 / 3.14	28 / 2.31	141 / 6.13	3.4 / 0.09	0 / 0.00	172 / 2.82	268 / 5.58	114 / 3.21	11 / 0.18	0.2 / 0.01	1.0	28		743	53	273	0	DWR
Price Domestic Well	2S/5E-16Q1	9-12-57	--	1090	8.4	61 / 3.04	27 / 2.19	123 / 5.35	6.2 / 0.16	16 / 0.53	216 / 3.54	174 / 3.62	105 / 2.96	13 / 0.21	0.3 / 0.02	1.5	7.3		640	50	262	58	DWR
Jones Domestic Well	2S/5E-17B1	9-30-57	--	840	6.7	59 / 2.94	21 / 1.74	77 / 3.35	2.1 / 0.05	0 / 0.00	145 / 2.38	182 / 3.79	64 / 1.80	4.7 / 0.08	0.1 / 0.01	0.76	34		516	41	234	115	DWR
M. Gomes & Sons Irrigation Well	2S/5E-17R1	8-13-57	68	705	7.0	45 / 2.25	15 / 1.27	73 / 3.18	2.8 / 0.07	0 / 0.00	155 / 2.54	115 / 2.39	62 / 1.75	12 / 0.19	0.2 / 0.01	1.7	28		431	47	176	49	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Capper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr). Ammonia (NH_4)

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M					SAN JOAQUIN COUNTY(5-22a) (Cont.)																	
J. Furtado Irrigation Well	2S/5E-19D1	8-1-57	67	877	7.5	59 / 2.94	20 / 1.62	93 / 4.05	2.6 / 0.07	0 / 0.00	152 / 2.49	156 / 3.25	97 / 2.74	9.0 / 0.14	0.2 / 0.01	0.58	27		539	47	228	104	DWR
West Side Irrigation Dist. Irrigation Well	2S/5E-22Q1	9-30-57	--	1290	6.8	79 / 3.94	35 / 2.89	127 / 5.52	3.6 / 0.09	0 / 0.00	199 / 3.26	137 / 2.85	219 / 6.18	8.0 / 0.13	0.3 / 0.02	0.92	31		739	44	342	179	DWR
West Side Irrigation Dist. Drainage Well	2S/5E-23P1	8-13-57	65	1870	7.1	123 / 6.14	57 / 4.70	175 / 7.61	3.0 / 0.08	0 / 0.00	296 / 4.85	202 / 4.21	326 / 9.19	25 / 0.40	0.2 / 0.01	1.8	42		1100	41	542	299	USGS
City of Tracy Municipal Well	2S/5E-28L1	8-1-57	73	995	7.7	65 / 3.24	25 / 2.05	106 / 4.61	3.5 / 0.09	0 / 0.00	185 / 3.03	191 / 3.98	100 / 2.82	9.6 / 0.16	0.2 / 0.01	0.88	23		615	46	265	113	DWR
Elmer Lynn Domestic Well	2S/5E-28P1	8-30-57	--	1260	7.3	107 / 5.34	39 / 3.17	91 / 3.96	4.0 / 0.10	0 / 0.00	320 / 5.24	107 / 2.23	175 / 4.94	14 / 0.23	0.4 / 0.02	0.70	38		733	32	426	164	DWR
West Side Irrigation Dist. Drainage Well	2S/5E-29B1	8-1-57	65	1730	7.2	106 / 5.29	60 / 4.90	162 / 7.05	2.3 / 0.06	0 / 0.00	347 / 5.69	137 / 2.85	305 / 8.60	17 / 0.28	0.3 / 0.02	1.1	39		1000	41	510	225	DWR
W. S. Parker Domestic Well	2S/5E-31J1	8-29-57	--	1460	8.0	112 / 5.59	31 / 2.58	121 / 5.26	4.4 / 0.11	0 / 0.00	155 / 2.54	75 / 1.56	319 / 9.00	24 / 0.39	0.3 / 0.02	0.53	32		795	39	409	282	DWR
West Side Irrigation Dist. Irrigation Well	2S/5E-32R1	8-1-57	66	1060	7.3	77 / 3.84	25 / 2.05	98 / 4.26	3.6 / 0.09	0 / 0.00	230 / 3.77	93 / 1.94	149 / 4.20	20 / 0.32	0.3 / 0.02	0.56	25		604	42	295	56	DWR
Paterson Dom. and Irr. Well	2S/5E-34A1	8-30-57	--	991	7.2	74 / 3.69	30 / 2.48	76 / 3.31	2.6 / 0.07	0 / 0.00	195 / 3.20	121 / 2.52	124 / 3.50	29 / 0.47	0.3 / 0.02	1.1	32		586	35	309	149	DWR
State of California Domestic Well	2S/6E-20J3	9-13-57	--	708	8.4	28 / 1.40	12 / 1.00	105 / 4.57	5.0 / 0.13	6 / 0.20	142 / 2.33	152 / 3.16	50 / 1.41	0.6 / 0.01	0.4 / 0.02	0.42	14		443	64	120	0	DWR
L. Huck Domestic Well	3S/5E-8L1	8-13-57	74	874	7.0	65 / 3.24	20 / 1.68	74 / 3.22	3.4 / 0.09	0 / 0.00	165 / 2.70	107 / 2.23	99 / 2.79	23 / 0.37	0.2 / 0.01	1.7	55		529	39	246	111	USGS
Rose Bros.	3S/5E-20A1	8-29-57	--	1460	7.5	92 / 4.59	34 / 2.78	170 / 7.40	3.7 / 0.09	0 / 0.00	283 / 4.64	310 / 6.45	130 / 3.67	2.7 / 0.04	0.3 / 0.02	3.6	22		907	50	369	149	DWR
W. Moler Irrigation Well	3S/5E-26M1	8-29-57	--	1270	7.3	111 / 5.54	37 / 3.03	105 / 4.57	3.0 / 0.08	0 / 0.00	219 / 3.59	349 / 7.27	74 / 2.09	25 / 0.40	0.4 / 0.02	0.97	38		851	35	429	137	DWR
W. Moler Irrigation Well	3S/5E-35D1	8-13-57	76	1220	--			107 / 4.65					71 / 2.00			1.1				36	409		USGS
Keyser & Lindeman Irrigation Well	3S/6E-15M1	9-13-57	--	1380	8.2	102 / 5.09	37 / 3.06	102 / 4.44	7.6 / 0.19	0 / 0.00	158 / 2.59	151 / 3.14	255 / 7.19	5.6 / 0.09	0.2 / 0.01	0.45	2.8		742	35	408	278	DWR
Keyser & Lindeman Irrigation Well	3S/6E-15Q1	9-13-57	--	3270	8.0	175 / 8.73	74 / 6.06	358 / 15.57	15 / 0.38	0 / 0.00	112 / 1.83	136 / 2.83	925 / 26.09	4.3 / 0.07	0.3 / 0.02	0.56	2.8		1750	51	740	648	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by [c]
	MDB&M					STANISLAUS COUNTY (5-22b)																	
Albert Groves Irrigation Well	1N/10E-15D1	9-15-57	--	299	8.2	25 / 1.25	13 / 1.03	17 / 0.74	2.2 / 0.06	0 / 0.00	140 / 2.29	8.2 / 0.17	14 / 0.39	7.5 / 0.12	0.2 / 0.01	0.13	55		211	24	114	0	DWR
Jim Dunn Irrigation Well	1S/10E-33R1	9-15-57	--	250	8.2	18 / 0.90	10 / 0.82	16 / 0.70	3.4 / 0.09	0 / 0.00	108 / 1.77	11 / 0.23	11 / 0.31	7 / 0.11	0.2 / 0.01	0.07	82		212	28	86	0	DWR
J. Demartini Domestic well	1S/11E-36E1	9-15-57	--	312	8.4	30 / 1.50	13 / 1.08	12 / 0.52	5.8 / 0.15	4 / 0.13	163 / 2.67	7.7 / 0.16	6.9 / 0.19	4.5 / 0.07	0.1 / 0.01	0.00	60		224	16	129	0	DWR
A. Ramirez Irrigation Well	2S/10E-10D1	9-15-57	--	149	8.1	12 / 0.60	5.6 / 0.46	7.8 / 0.34	2.6 / 0.07	0 / 0.00	82 / 1.34	2.3 / 0.05	2.4 / 0.07	3.3 / 0.05	0.2 / 0.01	0.01	63		139	23	53	0	DWR
Oakdale Land Co. Irrigation Well	2S/10E-27G1	9-15-57	--	258	8.5	25 / 1.25	7.9 / 0.65	15 / 0.65	2.6 / 0.07	4 / 0.13	127 / 2.08	3.5 / 0.07	9.6 / 0.27	7.1 / 0.11	0.2 / 0.01	0.00	39		176	25	95	0	DWR
P. Giambanco Ind. and Dom. Well	2S/10E-36N1	9-15-57	--	291	8.3	25 / 1.25	9.4 / 0.77	16 / 0.70	2.6 / 0.07	2 / 0.07	122 / 2.00	3.0 / 0.06	19 / 0.54	12 / 0.19	0.3 / 0.02	0.00	46		193	25	101	0	DWR
J. E. Gardner Domestic Well	3S/7E-33C1	9-15-57	--	413	8.2	26 / 1.30	12 / 1.02	40 / 1.74	2.3 / 0.06	0 / 0.00	155 / 2.54	9.4 / 0.20	46 / 1.30	2.2 / 0.04	0.2 / 0.01	0.07	20		234	42	116	0	DWR
V. A. Rodden Ranch Domestic & Irr.	3S/11E-9D1	9-15-57	--	298	8.3	20 / 1.00	11 / 0.90	19 / 0.83	2.6 / 0.07	0 / 0.00	117 / 1.92	5.6 / 0.12	23 / 0.65	7.9 / 0.13	0.4 / 0.02	0.02	74		222	30	95	0	DWR
H. E. Ketchum Irr. Well	3S/12E-26P1	9-15-57	--	4050	7.8	322 / 16.07	44 / 3.59	388 / 16.88	31 / 0.79	0 / 0.00	70 / 1.15	0.0 / 0.00	1280 / 36.10	2.7 / 0.04	0.0 / 0.00	0.40	75		2180	45	984	926	DWR
R. Cree Irr. Well	3S/13E-32D1	9-15-57	--	5020	7.9	332 / 16.57	29 / 2.37	648 / 28.19	17 / 0.43	0 / 0.00	88 / 1.44	1.2 / 0.02	1620 / 45.68	2.2 / 0.04	0.1 / 0.01	1.6	65		2760	59	948	875	DWR
I. Russel Irrigation Well	4S/6E-12N	6-26-57	68	1260	7.9	93 / 4.64	33 / 2.72	115 / 5.00	1.4 / 0.04	0 / 0.00	207 / 3.39	146 / 3.04	195 / 5.50	29 / 0.47	0.1 / 0.01	1.2	30		746	40	184	14	USGS
J. J. Raspo Irrigation Well	4S/6E-15E1	9-15-57	--	935	8.1	60 / 2.99	20 / 1.67	106 / 4.61	2.5 / 0.06	0 / 0.00	179 / 2.93	207 / 4.31	62 / 1.75	27 / 0.44	0.2 / 0.01	0.66	33		606	49	233	37	DWR
Glen Alard Irrigation Well	4S/6E-24P1	8-22-57	--	908	7.8	40 / 2.00	29 / 2.36	107 / 4.65	2.0 / 0.05	0 / 0.00	205 / 3.36	156 / 3.25	87 / 2.45	13 / 0.21	0.4 / 0.02	2.4	26		564	51	218	50	DWR
West Stanislaus Irr. Dist. Irrigation Well	4S/7E-16E1	6-27-57	66	1710	8.1	94 / 4.69	67 / 5.51	175 / 7.61	0.8 / 0.02	0 / 0.00	243 / 3.98	282 / 5.87	270 / 7.61	17 / 0.27	0.4 / 0.02	2.5	29		1060	43	510	311	USGS
W. W. Cox Irrigation Well	4S/7E-19G1	6-26-57	68	1180	7.9	83 / 4.14	39 / 3.22	105 / 4.57	2.4 / 0.06	0 / 0.00	260 / 4.26	163 / 3.39	162 / 4.57	10 / 0.16	0.1 / 0.01	1.9	28		722	38	184	0	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					STANISLAUS COUNTY(5-22b) (Cont.)																	
F. Lara & Son Irrigation Well	4S/7E-21H1	6-27-57	64	1420	8.2	60 / 2.99	85 / 7.01	116 / 5.05	2.4 / 0.06	0 / 0.00	212 / 3.47	269 / 5.60	202 / 5.70	15 / 0.24	0.1 / 0.01	0.68	29		883	33	500	326	USGS
Frank Cox Irrigation Well	4S/7E-34J1	6-26-57	68	1220	8.2	40 / 2.00	88 / 7.20	90 / 3.92	1.9 / 0.05	0 / 0.00	290 / 4.75	108 / 2.25	200 / 5.64	13 / 0.21	0.1 / 0.01	0.41	27		711	30	460	222	USGS
Turlock Irr. District Irrigation Well	4S/8E-27L1	8-22-57	68	1490	8.1	58 / 2.89	18 / 1.51	224 / 9.74	4.9 / 0.13	0 / 0.00	228 / 3.74	71 / 1.48	312 / 8.80	5.3 / 0.09	0.2 / 0.01	0.24	40		846	68	220	33	DWR
Turlock Irr. District Irrigation Well	4S/9E-20A1	8-22-57	66	689	8.5	53 / 2.64	19 / 1.56	74 / 3.22	4.6 / 0.12	14 / 0.47	292 / 4.79	36 / 0.75	41 / 1.16	18 / 0.29	0.1 / 0.01	0.05	49		453	43	210	0	DWR
Turlock Irr. District Irrigation Well	4S/9E-25A1	8-22-57	67	357	7.8	29 / 1.45	9.4 / 0.77	29 / 1.26	2.0 / 0.05	0 / 0.00	140 / 2.29	12 / 0.25	18 / 0.51	26 / 0.42	0.3 / 0.02	0.03	48		243	36	111	0	DWR
Turlock Irr. District Irrigation Well	4S/9E-30R1	8-22-57	66	609	8.4	44 / 2.20	13 / 1.08	71 / 3.09	4.2 / 0.11	7.8 / 0.26	263 / 4.31	15 / 0.31	41 / 1.16	17 / 0.27	0.3 / 0.02	0.02	57		399	48	164	0	DWR
Johnson Bros. Irrigation Well	4S/10E-1D1	9-15-57	—	384	8.4	16 / 0.80	5.4 / 0.44	50 / 2.18	8.8 / 0.23	2 / 0.07	110 / 1.80	0.0 / 0.00	62 / 1.75	0.5 / 0.01	0.3 / 0.02	0.45	73		272	60	62	0	DWR
J. W. Short Irrigation Well	4S/11E-5M1	9-15-57	—	310	8.2	2.9 / 0.14	1.0 / 0.08	57 / 2.48	3.4 / 0.09	0 / 0.00	93 / 1.52	0.8 / 0.02	49 / 1.38	0.3 / 0.00	0.4 / 0.02	0.25	66		227	89	11	0	DWR
Turlock Irr. District Irrigation Well	4S/11E-21D1	8-22-57	69	219	8.3	17 / 0.85	6 / 0.49	19 / 0.83	4.9 / 0.13	6.8 / 0.23	112 / 1.84	1.6 / 0.03	4.2 / 0.12	8 / 0.13	0.4 / 0.02	0.00	76		199	36	67	0	DWR
D. Cox Irrigation Well	5S/7E-2H1	7-26-57	—	1220	7.7	41 / 2.04	95 / 7.81	66 / 2.87	2.4 / 0.06	0 / 0.00	314 / 5.15	114 / 2.37	179 / 5.05	13 / 0.21	0.3 / 0.02	0.62	24		689	22	493	335	DWR
Helena Raines Irrigation Well	5S/7E-9H1	6-27-57	70	1570	8.1	54 / 2.69	69 / 5.71	156 / 6.79	1.8 / 0.05	0 / 0.00	157 / 2.57	205 / 4.27	315 / 8.88	2.8 / 0.05	0.2 / 0.01	0.56	24		905	45	420	291	USGS
C. Zacharias Irrigation Well	5S/7E-23B1	6-28-57	70	1220	8.1	58 / 2.89	61 / 4.99	108 / 4.70	3.0 / 0.08	0 / 0.00	192 / 3.15	209 / 4.35	176 / 4.96	11 / 0.18	0.1 / 0.01	0.36	32		753	37	394	237	USGS
Turlock Irr. District Irrigation Well	5S/8E-1R1	8-22-57	68	945	8.4	45 / 2.25	11 / 0.87	135 / 5.87	4.7 / 0.12	6.0 / 0.20	211 / 3.46	27 / 0.56	169 / 4.77	7.8 / 0.13	0.3 / 0.02	0.14	49		559	64	156	0	DWR
T. & T. Ranch Irrigation Well	5S/8E-8G1	9-15-57	—	1790	8.3	81 / 4.04	113 / 9.33	140 / 6.09	2.6 / 0.07	4 / 0.13	348 / 5.70	413 / 8.60	175 / 4.94	22 / 0.35	0.4 / 0.02	0.75	31		1150	31	669	377	DWR
Y. Puch Irr. and Dom. Well	5S/8E-27M1	9-15-57	—	1370	8.3	88 / 4.39	58 / 4.76	125 / 5.44	2.4 / 0.06	3 / 0.10	188 / 3.08	494 / 10.29	42 / 1.18	9.2 / 0.15	0.6 / 0.03	0.49	30		945	37	458	299	DWR

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER
1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by [c]
	MDB&M					STANISLAUS COUNTY (5-22b) (Cont.)																	
Patterson Canning Co. Industrial Well	5S/8E-30C1	4-18-57	--	1340	7.7	82 / 4.09	64 / 5.27	128 / 5.57	1.4 / 0.04	0 / 0.00	232 / 3.80	374 / 7.79	92 / 2.59	16 / 0.26	0.3 / 0.02	0.53	31		903	37	468	278	USGS
Turlock Irr. District Irrigation Well	5S/9E-9A1	8-22-57	65	532	8.3	42 / 2.10	14 / 1.18	55 / 2.39	2.7 / 0.07	6.8 / 0.23	269 / 4.41	10 / 0.21	25 / 0.70	8.6 / 0.14	0.2 / 0.01	0.02	61		357	42	164	0	DWR
B. Ellis Irrigation Well	5S/9E-13G1	8-22-57	76	562	8.4	48 / 2.40	17 / 1.40	51 / 2.22	3.9 / 0.10	7.8 / 0.26	281 / 4.61	10 / 0.21	26 / 0.73	11 / 0.18	0.2 / 0.01	0.02	61		374	36	190	0	DWR
Turlock Irr. District Irrigation Well	5S/9E-35Q1	8-9-57	--		7.7	71 / 3.55	18 / 1.48	169 / 7.35			412 / 6.74	21 / 0.46	184 / 4.73			0.10	52		771	59	253	0	TL
Turlock Irr. District Irrigation Well	5S/10E-4F1	8-22-57	68	384	7.9	33 / 1.65	11 / 0.87	32 / 1.39	2.0 / 0.05	0 / 0.00	183 / 3.00	8.9 / 0.19	14 / 0.39	21 / 0.34	0.2 / 0.01	0.08	53		265	35	126	0	DWR
Turlock Irri. District Irrigation Well	5S/10E-28H1	8-22-57	66	493	8.4	40 / 2.00	12 / 1.02	49 / 2.13	3.3 / 0.08	6.0 / 0.20	231 / 3.79	13 / 0.27	22 / 0.62	18 / 0.29	0.3 / 0.02	0.02	53		331	41	151	0	DWR
Turlock Irr. District Irrigation Well	5S/10E-30F1	8-22-57	66	739	8.3	45 / 2.25	16 / 1.29	92 / 4.00	3.5 / 0.09	2 / 0.07	295 / 4.84	34 / 0.71	57 / 1.61	16 / 0.26	0.3 / 0.02	0.03	53		464	52	177	0	DWR
Turlock Irr. District Irrigation Well	5S/11E-7P1	8-23-57	65	490	7.8	49 / 2.45	17 / 1.43	29 / 1.26	3.1 / 0.08	0 / 0.00	231 / 3.79	25 / 0.52	13 / 0.37	31 / 0.50	0.3 / 0.02	0.01	90		371	24	194	5	DWR
R. Perkins Irrigation Well	5S/12E-6D1	9-15-57	--	191	8.2	13 / 0.65	3.8 / 0.31	19 / 0.83	2.8 / 0.07	0 / 0.00	88 / 1.44	3.0 / 0.06	6.9 / 0.19	8.6 / 0.14	0.3 / 0.02	0.02	65		165	45	48	0	DWR
Turlock Irr. District Irrigation Well	6S/9E-1Q1	8-9-57	--		7.6	85 / 4.27	17 / 1.40	237 / 10.32			293 / 4.80	14 / 0.31	376 / 9.64			0.10	38		1013	65	285	44	TL
J. Campbell Irrigation Well	6S/9E-18F1	7-4-57	--	619	7.8	48 / 2.40	29 / 2.35	42 / 1.83	1.9 / 0.05	0 / 0.00	263 / 4.31	87 / 1.81	16 / 0.45	8.3 / 0.13	0.0 / 0.00	0.38	23		386	28	238	22	USGS
Turlock Irr. District Irrigation Well	6S/10E-7D	8-9-57	--		7.6	93 / 4.65	24 / 1.93	272 / 11.78			247 / 4.05	12 / 0.25	500 / 14.10			0.10	55		1182	64	330	127	TL
Central California Irr. Dist. Irr. Well	7S/8E-12P1	7-3-57	--	802	7.9	15 / 0.75	63 / 5.15	58 / 2.52	2.8 / 0.07	0 / 0.00	305 / 5.00	73 / 1.52	68 / 1.92	9.0 / 0.15	0.2 / 0.01	0.35	22		461	30	295	45	USGS
H. T. Krogh Irrigation Well	7S/8E-22K	9-15-57	--	2300	7.7	197 / 9.83	103 / 8.51	80 / 3.48	2.7 / 0.07	0 / 0.00	194 / 3.18	55 / 1.15	602 / 16.98	13 / 0.21	0.2 / 0.01	0.14	29		1180	16	918	758	DWR
Central California Irr. Dist. Irr. Well	7S/8E-23R1	7-3-57	--	1700	7.8	25 / 1.25	105 / 8.63	154 / 6.70	4.8 / 0.12	0 / 0.00	269 / 4.41	120 / 2.50	360 / 10.15	5.8 / 0.09	0.2 / 0.01	0.47	31		939	40	494	273	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Twining Laboratory (T.L.) or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					MERCED COUNTY (5-22c)																	
W. S. Batterman Irrigation well	5S/12E-32P1	9-18-57	73	165	7.8	11 / 0.55	2.8 / 0.23	15 / 0.65	4.4 / 0.11	0 / 0.00	69 / 1.13	2.1 / 0.04	8.6 / 0.24	3.7 / 0.06	0.3 / 0.02	0.00	51		133	42	39	0	DWR
Turlock Irr. District Irrigation well	6S/10E-9B1	8-22-57	65	659	7.5	47 / 2.35	14 / 1.17	70 / 3.05	3.9 / 0.10	0 / 0.00	292 / 4.79	20 / 0.42	43 / 1.21	18 / 0.29	0.3 / 0.02	0.06	60		420	46	176	0	DWR
Riverside School Irrigation well	6S/10E-28K1	8-22-57	65	960	7.9	40 / 2.00	9.7 / 0.80	140 / 6.09	4.1 / 0.10	0 / 0.00	278 / 4.56	23 / 0.48	141 / 3.98	6.2 / 0.10	0.5 / 0.03	0.11	43		545	68	140	0	DWR
Turlock Irr. District Irrigation Well	6S/11E-9C1	8-23-57	66	370	7.8	33 / 1.65	8.1 / 0.67	26 / 1.13	4.4 / 0.11	0 / 0.00	144 / 2.36	18 / 0.37	13 / 0.37	26 / 0.42	0.5 / 0.03	0.00	52		252	32	116	0	DWR
Turlock Irr. District Irrigation Well	6S/11E-10J1	8-23-57	65	258	8.0	23 / 1.15	6.4 / 0.53	18 / 0.78	2.4 / 0.06	0 / 0.00	89 / 1.46	20 / 0.42	6.5 / 0.18	27 / 0.44	0.2 / 0.01	0.00	53		201	31	84	11	DWR
Merced Irr. District Irrigation well	6S/11E-27K1	7-9-57	68	207	8.2	14 / 0.70	3.6 / 0.30	21 / 0.91	3.8 / 0.10	0 / 0.00	91 / 1.49	14 / 0.29	4.9 / 0.14	11 / 0.18	0.3 / 0.02	0.05	56		174	45	50	0	DWR
Irrigation well	6S/12E-5J1	9-18-57	70	141	7.5	9.4 / 0.47	2.6 / 0.21	16 / 0.70	1.5 / 0.04	0 / 0.00	70 / 1.15	2.3 / 0.05	2.9 / 0.08	4.6 / 0.07	0.3 / 0.02	0.02	31		105	49	34	0	DWR
A. Ferrari Irrigation well	6S/12E-7B1	9-19-57	72	152	8.0	11 / 0.55	2.6 / 0.21	17 / 0.74	3.0 / 0.08	0 / 0.00	78 / 1.28	3.0 / 0.06	7.7 / 0.22	0.1 / 0.01	3.9 / 0.06		45		131	47	38	0	DWR
C. Roberts Dom. and Irr. Well	6S/12E-8D1	9-18-57	74	226	7.6	16 / 0.80	4.9 / 0.40	18 / 0.78	2.0 / 0.05	0 / 0.00	91 / 1.49	6.4 / 0.13	10 / 0.28	15 / 0.24	0.4 / 0.02	0.04	31		149	38	60	0	DWR
L. Roberts Dom. and Irr. Well	6S/12E-8D2	9-18-57	74	124	7.5	12 / 0.60	0.0 / 0.00	13 / 0.57	3.0 / 0.08	0 / 0.00	64 / 1.05	4.4 / 0.09	3.7 / 0.10	47 / 0.08	0.0 / 0.00	0.03	28		100	46	30	0	DWR
C. W. Magneson Domestic Well	6S/12E-9D1	9-18-57	70	236	8.2	17 / 0.85	5.7 / 0.47	20 / 0.87	3.0 / 0.08	0 / 0.00	121 / 1.98	5.4 / 0.11	5.6 / 0.16	7.9 / 0.13	0.0 / 0.00	0.02	31		155	38	66	0	DWR
Merced Irr. District Irrigation well	6S/12E-21N1	7-8-57	70	226	8.3	16 / 0.80	5.8 / 0.48	20 / 0.87	3.4 / 0.09	2 / 0.07	95 / 1.56	19 / 0.40	4.9 / 0.14	9.8 / 0.16	0.3 / 0.02	0.03	69		197	39	64	0	DWR
Merced Irr. District Irrigation well	6S/12E-23H1	7-8-57	68	193	8.0	16 / 0.80	6.8 / 0.56	11 / 0.48	1.4 / 0.04	0 / 0.00	61 / 1.00	17 / 0.35	3.4 / 0.10	26 / 0.42	0.4 / 0.02	0.00	62		174	26	68	18	DWR
Merced Irr. District Irrigation well	6S/13E-6N1	7-8-57	64	110	8.0	8.3 / 0.41	4.0 / 0.33	9.8 / 0.43	1.2 / 0.03	0 / 0.00	57 / 0.93	2.5 / 0.05	2.0 / 0.06	4.8 / 0.08	0.6 / 0.03	0.00	40		101	36	37	0	DWR
Merced Irr. District Irrigation well	6S/13E-31F1	7-8-57	68	217	8.3	17 / 0.85	6.0 / 0.49	18 / 0.78	1.7 / 0.04	1 / 0.03	88 / 1.44	17 / 0.35	4.4 / 0.12	16 / 0.26	0.3 / 0.02	0.00	69		193	36	67	0	DWR

a Determined by addition of constituents
b Gravimetric determination
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER
1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					MERCED COUNTY (5-22c) (Cont.)																	
Central California Irr. Dist. Irr. Well	7S/9E-32H1	7-5-57	--	945	7.7	72 / 3.59	38 / 3.11	84 / 3.65	1.8 / 0.05	0 / 0.00	266 / 4.36	200 / 4.16	52 / 1.47	11 / 0.18	0.0 / 0.00	0.42	30		620	35	335	117	USGS
Merced Irr. District Irrigation Well	7S/12E-1Q1	7-8-57	68	283	8.4	24 / 1.20	7.3 / 0.60	22 / 0.96	1.7 / 0.04	5 / 0.17	105 / 1.72	18 / 0.37	11 / 0.31	17 / 0.27	0.4 / 0.02	0.00	76		234	34	90	0	DWR
Merced Irr. District Irrigation Well	7S/12E-3F1	7-8-57	68	240	8.2	20 / 1.00	6.8 / 0.56	16 / 0.70	1.6 / 0.04	0 / 0.00	78 / 1.28	21 / 0.44	5.9 / 0.17	27 / 0.44	0.3 / 0.02	0.01	73		210	30	78	14	DWR
Merced Irr. District Irrigation Well	7S/12E-8E1	7-9-57	66	413	8.3	37 / 1.85	13 / 1.07	29 / 1.26	3.0 / 0.08	8 / 0.27	168 / 2.75	8.4 / 0.17	15 / 0.42	32 / 0.52	0.3 / 0.02	0.00	34		263	30	146	0	DWR
Merced Irr. District Irrigation Well	7S/12E-19A1	8-26-57	66	294	8.0	29 / 1.45	7.4 / 0.61	20 / 0.87	4.1 / 0.10	0 / 0.00	154 / 2.52	7.4 / 0.15	5.1 / 0.14	11 / 0.18	0.3 / 0.02	0.03	59		219	29	103	0	DWR
Merced Irr. District Irrigation Well	7S/13E-4P1	7-9-57	66	314	8.4	31 / 1.55	7.9 / 0.65	23 / 1.00	3.0 / 0.08	6 / 0.20	146 / 2.39	8.4 / 0.17	7.0 / 0.20	15 / 0.24	0.1 / 0.01	0.00	36		209	30	110	0	DWR
Merced Irr. District Irrigation Well	7S/13E-19H1	7-9-57	69	282	7.6	27 / 1.35	9.8 / 0.81	14 / 0.61	2.2 / 0.06	0 / 0.00	130 / 2.13	7.4 / 0.15	7.0 / 0.20	15 / 0.24	0.2 / 0.01	0.00	29		176	22	108	2	DWR
Merced Irr. District Irrigation Well	7S/13E-22Q1	7-15-57	66	374	8.1	37 / 1.85	14 / 1.19	21 / 0.91	3.0 / 0.08	0 / 0.00	197 / 3.23	8.4 / 0.17	9.5 / 0.27	13 / 0.21	0.3 / 0.02	0.02	71		274	23	152	0	DWR
Merced Irr. District Irrigation Well	7S/14E-28J1	7-9-57	67	386	8.5	28 / 1.40	16 / 1.28	38 / 1.65	3.4 / 0.09	14 / 0.47	200 / 3.28	7.7 / 0.16	8.0 / 0.23	4.8 / 0.08	0.3 / 0.02	0.00	40		258	37	134	0	DWR
Merced Irr. District Irrigation Well	7S/15E-30E1	7-15-57	65	592	7.9	20 / 1.00	37 / 3.06	49 / 2.13	2.0 / 0.05	0 / 0.00	223 / 3.65	85 / 1.77	12 / 0.34	32 / 0.52	0.2 / 0.01	0.01	58		405	34	203	0	DWR
Merced Irr. District Irrigation Well	7S/15E-34R1	7-10-57	66	302	8.0	25 / 1.25	10 / 0.85	21 / 0.91	3.0 / 0.08	0 / 0.00	151 / 2.47	8.4 / 0.17	7.7 / 0.22	11 / 0.18	0.3 / 0.02	0.04	56		216	29	105	0	DWR
Gustine Drainage Dist. Irrigation Well	8S/9E-16E1	7-5-57	--	781	7.9	58 / 2.89	29 / 2.39	75 / 3.26	1.4 / 0.04	0 / 0.00	326 / 5.34	96 / 2.00	37 / 1.04	11 / 0.18	0.3 / 0.02	0.44	32		501	38	264	0	USGS
Merced Irr. District Irrigation Well	8S/14E-2D1	7-10-57	69	294	8.1	22 / 1.10	7.5 / 0.62	29 / 1.26	2.5 / 0.06	0 / 0.00	155 / 2.54	8.4 / 0.17	6.3 / 0.18	7.4 / 0.12	0.2 / 0.01	0.03	44		203	41	86	0	DWR
Merced Irr. District Irrigation Well	8S/14E-24A1	7-10-57	68	348	8.1	31 / 1.55	13 / 1.07	23 / 1.00	5.6 / 0.14	0 / 0.00	203 / 3.33	7.9 / 0.16	3.9 / 0.11	5.5 / 0.09	0.2 / 0.01	0.01	77		267	27	131	0	DWR
Merced Irr. District Irrigation Well	8S/16E-17P1	7-10-57	67	322	8.1	30 / 1.50	14 / 1.14	17 / 0.74	3.2 / 0.08	0 / 0.00	181 / 2.97	11 / 0.23	5.4 / 0.15	4.7 / 0.08	0.2 / 0.01	0.02	60		234	21	132	0	DWR

a. Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by c
	MDB&M					MERCED COUNTY (5-22c) (Cont.)																	
Gustine Drainage Dist. Irrigation Well	9S/9E-5B1	7-5-57	--	814	7.8	55 / 2.74	30 / 2.43	84 / 3.65	1.7 / 0.04	0 / 0.00	351 / 5.75	69 / 1.44	52 / 1.47	11 / 0.18	0.0 / 0.00	0.63	34		510	41	259	0	USGS
Central California Irr. Dist. Irr. Well	9S/9E-21F1	7-3-57	--	795	7.9	36 / 1.80	32 / 2.62	84 / 3.65	2.1 / 0.05	0 / 0.00	280 / 4.59	56 / 1.17	79 / 2.23	14 / 0.23	0.2 / 0.01	1.3	22		465	45	221	0	USGS
State Game Refuge Dom. and Irr. well	9S/10E-36R1	7-8-57	--	512	8.1	31 / 1.55	19 / 1.59	50 / 2.18	1.9 / 0.05	0 / 0.00	186 / 3.05	54 / 1.12	40 / 1.13	10 / 0.16	0.0 / 0.00	0.42	41		339	41	157	4	USGS
Miller & Lux Irrigation Well	9S/13E-31D1	7-10-57	--	763	7.7	41 / 2.05	14 / 1.17	93 / 4.05	1.8 / 0.05	0 / 0.00	220 / 3.61	20 / 0.42	122 / 3.44	0.0 / 0.00	0.0 / 0.00	0.03	57		457	55	161	0	USGS
Central California Irr. Dist. Irr. Well	10S/10E-28D1	7-5-57	--	534	7.7	45 / 2.25	23 / 1.90	34 / 1.48	2.9 / 0.07	0 / 0.00	222 / 3.64	40 / 0.83	37 / 1.04	0.4 / 0.01	0.0 / 0.00	0.34	41		333	26	208	26	USGS
Bisignani Bros. Irrigation well	10S/12E-6K1	9-6-57	--	668	7.8	26 / 1.30	14 / 1.14	95 / 4.13	2.0 / 0.05	0 / 0.00	161 / 2.64	52 / 1.08	96 / 2.71	0.5 / 0.01	0.0 / 0.00	0.23	37		402	62	122	0	USGS
San Luis Canal Co. Irrigation well	10S/12E-25L	6-25-57	--	702	7.4	31 / 1.55	9.8 / 0.81	97 / 4.22	2.6 / 0.07	0 / 0.00	154 / 2.52	46 / 0.96	115 / 3.24	0.0 / 0.00	0.2 / 0.01	0.19	29		407	63	118	0	USGS
Central California Irr. Dist. Irr. Well	10S/12E-27K1	7-3-57	--	1790	7.4	83 / 4.14	35 / 2.84	227 / 9.87	6.0 / 0.15	0 / 0.00	190 / 3.11	111 / 2.31	420 / 11.84	0.5 / 0.01	0.0 / 0.00	0.42	33		1010	58	349	193	USGS
Central California Irr. Dist. Irr. Well	10S/12E-35K1	7-3-57	--	2130	7.3	51 / 2.54	61 / 4.98	288 / 12.53	5.6 / 0.14	0 / 0.00	180 / 2.95	126 / 2.62	535 / 15.09	0.2 / 0.00	0.2 / 0.01	0.84	32		1190	62	376	228	USGS
R. L. Lindman Irrigation Well	11S/10E-23K1	7-2-57	--	4020	8.1	208 / 10.38	159 / 13.10	493 / 21.45	10 / 0.26	0 / 0.00	175 / 2.87	885 / 18.43	742 / 20.92	77 / 1.24	0.2 / 0.01	1.9	27		2690	47	1170	1026	USGS
San Hamburg Irrigation well	12S/11E-3C1	7-2-57	--	1413	7.75	57 / 2.84	37 / 3.08	244 / 10.61	4.4 / 0.11	0 / 0.00	200 / 3.28	468 / 9.74	111 / 3.13	1.2 / 0.02	0.2 / 0.01	2.8	40		1060	64	296	132	USGS

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M					MADERA COUNTY (5-22d)																	
Roger Jessup Irrigation Well	9S/15E-24F1	7-26-57	71	220	7.3	20 / 1.00	5.1 / 0.42	15 / 0.65	2.3 / 0.06	0 / 0.00	87 / 1.43	3.6 / 0.07	19 / 0.54	3.6 / 0.06	0.0 / 0.00	0.00	58		170	31	71	0	DWR
City of Chowchilla Municipal Well	9S/16E-30C1	7-26-57	70	202	7.1	17 / 0.85	3.8 / 0.31	15 / 0.65	2.8 / 0.07	0 / 0.00	79 / 1.29	2.8 / 0.06	17 / 0.48	1.8 / 0.03	0.0 / 0.00	0.00	62		161	35	58	0	DWR
Will Baker Irrigation Well	9S/16E-35N1	7-26-57	72	288	7.3	25 / 1.25	5.2 / 0.43	25 / 1.09	3.2 / 0.08	0 / 0.00	118 / 1.93	3.8 / 0.08	26 / 0.73	3.3 / 0.05	0.0 / 0.00	0.00	49		198	38	84	0	DWR
Red Top Ranch Irrigation Well	10S/14E-8B1	7-24-57	66	530	7.9	58 / 2.89	12 / 0.97	39 / 1.70	4.0 / 0.10	0 / 0.00	261 / 4.28	6.1 / 0.13	32 / 0.90	14 / 0.22	0.2 / 0.01	0.00	80		373	30	193	0	DWR
Ed Hughes Irrigation Well	10S/14E-24B1	7-24-57	68	658	8.1	68 / 3.39	13 / 1.09	39 / 1.70	4.5 / 0.12	0 / 0.00	156 / 2.56	6.4 / 0.13	121 / 3.41	9.3 / 0.15	0.0 / 0.00	0.00	85		423	27	224	96	DWR
Homer Probert Irrigation Well	10S/15E-31A1	7-24-57	70	353	7.9	32 / 1.60	8.0 / 0.66	26 / 1.13	3.3 / 0.08	0 / 0.00	127 / 2.08	3.8 / 0.08	43 / 1.21	4.3 / 0.07	0.3 / 0.02	0.00	78		261	33	113	9	DWR
H. Wilson Irrigation Well	10S/16E-24H1	7-26-57	72	229	7.1	19 / 0.95	5.5 / 0.45	15 / 0.65	2.4 / 0.06	0 / 0.00	79 / 1.29	5.1 / 0.11	12 / 0.34	21 / 0.34	0.0 / 0.00	0.00	62		181	31	70	6	DWR
H. C. Shelton Irrigation Well	10S/16E-30K1	7-24-57	70	246	7.8	20 / 1.00	5.4 / 0.44	21 / 0.91	2.0 / 0.05	0 / 0.00	94 / 1.54	2.5 / 0.05	22 / 0.62	11 / 0.18	0.2 / 0.01	0.00	49		179	38	72	0	DWR
Madera Country Club Irr. and Dom. Well	10S/17E-25N1	7-24-57	72	233	7.4	18 / 0.90	6.1 / 0.50	19 / 0.83	3.0 / 0.08	0 / 0.00	84 / 1.38	4.0 / 0.08	16 / 0.45	18 / 0.29	0.1 / 0.01	0.00	81		206	36	70	1	DWR
Red Top Ranch Irrigation Well	11S/14E-1A1	7-24-57	68	648	8.0	59 / 2.94	15 / 1.24	51 / 2.22	4.3 / 0.11	0 / 0.00	202 / 3.31	13 / 0.27	98 / 2.76	3.9 / 0.06	0.0 / 0.00	0.00	58		401	34	209	44	DWR
Diamond T Ranch Irrigation Well	11S/14E-9G1	7-25-57	68	562	7.2	59 / 2.94	10 / 0.86	33 / 1.44	3.7 / 0.09	0 / 0.00	154 / 2.52	7.9 / 0.16	90 / 2.54	2.5 / 0.04	0.0 / 0.00	0.00	62		344	27	190	64	DWR
Diamond T Ranch Irrigation Well	11S/14E-20L1	7-25-57	68	2240	7.5	167 / 8.33	37 / 3.06	216 / 9.40	5.6 / 0.14	0 / 0.00	146 / 2.39	55 / 1.15	600 / 16.92	7.4 / 0.12	0.1 / 0.01	0.00	58		1220	45	570	450	DWR
Henry B. Shein Irrigation Well	11S/15E-23L1	7-23-57	68	339	7.1	32 / 1.60	8.0 / 0.66	28 / 1.22	2.8 / 0.07	0 / 0.00	169 / 2.77	4.4 / 0.09	18 / 0.51	6.2 / 0.10	0.2 / 0.01	0.02	67		250	34	113	0	DWR
Red Top Ranch Irrigation Well	11S/15E-29H1	7-24-57	68	385	7.7	37 / 1.85	11 / 0.87	34 / 1.48	2.8 / 0.07	0 / 0.00	188 / 3.08	7.6 / 0.16	34 / 0.96	6.0 / 0.10	0.2 / 0.01	0.01	67		292	35	136	0	DWR
L. J. Peatman Irrigation Well	11S/16E-22K1	7-23-57	70	273	7.4	22 / 1.10	5.6 / 0.46	21 / 0.91	2.8 / 0.07	0 / 0.00	111 / 1.82	4.1 / 0.09	19 / 0.54	3.8 / 0.06	0.2 / 0.01	0.02	72		206	36	78	0	DWR

o Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					MADERA COUNTY (5-22d) (Cont.)																	
City of Madera Municipal Well	11S/17E-25B1	7-22-57	70	207	6.9	15 / 0.75	3.5 / 0.29	19 / 0.83	2.9 / 0.07	0 / 0.00	82 / 1.34	3.6 / 0.07	18 / 0.51	0.8 / 0.01	0.2 / 0.01	0.06	62		165	43	52	0	DWR
Santa Fe Railroad Domestic Well	11S/18E-17H1	7-22-57	70	243	7.3	20 / 1.00	4.1 / 0.34	22 / 0.96	1.9 / 0.05	0 / 0.00	98 / 1.61	6.3 / 0.13	21 / 0.59	0.4 / 0.01	0.0 / 0.00	0.00	42		166	41	67	0	DWR
Arvid Allen Irrigation Well	12S/14E-17B1	7-23-57	65	254	7.0	5.8 / 0.29	1.1 / 0.09	52 / 2.26	0.7 / 0.02	0 / 0.00	103 / 1.69	13 / 0.27	25 / 0.70	0.1 / 0.00	0.4 / 0.02	0.08	27		176	82	19	0	DWR
East Side Ranch Irrigation Well	12S/14E-34H1	7-25-57	67	267	7.6	0.4 / 0.02	0.5 / 0.04	57 / 2.48	0.7 / 0.02	0 / 0.00	98 / 1.61	15 / 0.31	22 / 0.62	0.2 / 0.00	0.8 / 0.04	0.17	53		198	97	3	0	DWR
Red Top Ranch Irrigation Well	12S/15E-4K1	7-24-57	68	380	7.9	37 / 1.85	10 / 0.85	27 / 1.17	3.1 / 0.08	0 / 0.00	142 / 2.33	7.2 / 0.15	53 / 1.49	1.8 / 0.03	0.3 / 0.02	0.01	66		275	30	135	19	DWR
Red Top Ranch Irrigation Well	12S/15E-22F1	7-24-57	69	319	7.5	28 / 1.40	4.4 / 0.36	32 / 1.39	1.8 / 0.05	0 / 0.00	142 / 2.33	7.4 / 0.15	27 / 0.76	1.5 / 0.02	0.3 / 0.02	0.00	53		225	44	88	0	DWR
W. Gillis Irrigation Well	12S/15E-27G1	7-23-57	64	302	7.3	22 / 1.10	4.1 / 0.34	34 / 1.48	3.3 / 0.08	0 / 0.00	126 / 2.07	5.9 / 0.12	26 / 0.73	1.3 / 0.02	0.2 / 0.01	0.03	53		212	49	72	0	DWR
Beard Irrigation Well	12S/17E-5R1	7-25-57	70	191	7.6	13 / 0.65	4.7 / 0.39	16 / 0.70	3.1 / 0.08	0 / 0.00	76 / 1.25	3.1 / 0.06	17 / 0.48	1.5 / 0.02	0.2 / 0.01	0.00	65		161	38	52	0	DWR
Libbiee Ranch Irrigation Well	12S/17E-24A1	7-23-57	68	207	7.2	16 / 0.80	5.4 / 0.44	15 / 0.65	3.4 / 0.09	0 / 0.00	85 / 1.39	4.6 / 0.10	13 / 0.37	4.7 / 0.08	0.2 / 0.01	0.00	67		171	33	62	0	DWR
Iverson & Carlton Irrigation Well	12S/18E-14J1	7-23-57	72	273	—	20 / 1.00	6.1 / 0.50	22 / 0.96	3.4 / 0.09	0 / 0.00	76 / 1.25	8.1 / 0.17	25 / 0.70	22 / 0.36	0.3 / 0.02	0.00	77		221	38	75	13	DWR
Columbia Canal Co. Irrigation Well	13S/15E-22J1	7-25-57	68	195	7.4	5.6 / 0.28	0.0 / 0.00	37 / 1.61	0.9 / 0.02	0 / 0.00	95 / 1.56	4.6 / 0.10	8.8 / 0.25	0.6 / 0.01	0.4 / 0.02	0.02	39		144	84	14	0	DWR
K. Seibert Irrigation Well	13S/16E-2C1	7-25-57	71	270	7.8	19 / 0.95	6.7 / 0.55	28 / 1.22	2.1 / 0.05	0 / 0.00	133 / 2.18	3.5 / 0.07	16 / 0.45	2.0 / 0.03	0.3 / 0.02	0.00	58		201	44	75	0	DWR
George Roberts Dom. and Irr. Well	13S/17E-5P1	7-22-57	80	260	7.5	21 / 1.05	3.8 / 0.31	26 / 1.13	2.5 / 0.06	0 / 0.00	111 / 1.82	7.2 / 0.15	19 / 0.54	4.0 / 0.06	0.0 / 0.00	0.00	77		216	44	68	0	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S.Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Co)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					FRESNO COUNTY - WESTSIDE AREA(5-22e)																	
Doe Paloe Drainage Dist. Irr. Well	11S/12E-13J1	7-3-57	--	1870	7.1	98 / 4.89	50 / 4.15	200 / 8.70	5.2 / 0.13	0 / 0.00	188 / 3.08	108 / 2.25	460 / 12.97	1.3 / 0.02	0.1 / 0.01	0.28	31		1050	49	452	298	USGS
Central Calif. Irr. Dist. Irr. Well	11S/13E-17F1	7-3-57	--	1190	7.3	36 / 1.80	21 / 1.72	173 / 7.53	4.0 / 0.10	0 / 0.00	171 / 2.80	75 / 1.56	248 / 6.99	0.7 / 0.01	0.0 / 0.00	0.51	33		675	68	176	36	USGS
Miller & Lux Irrigation Well	11S/13E-36B1	7-3-57	--	1010	7.7	30 / 1.50	6.8 / 0.56	169 / 7.35	2.6 / 0.07	0 / 0.00	137 / 2.25	90 / 1.87	186 / 5.25	0.1 / 0.00	0.0 / 0.00	0.29	52		604	78	103	0	USGS
Redfern Ranch Irrigation Well	12S/13E-9C1	7-3-57	--	3660	7.5	90 / 4.49	142 / 11.71	575 / 25.01	12 / 0.31	0 / 0.00	218 / 3.57	1320 / 27.48	395 / 11.14	0.2 / 0.00	0.4 / 0.02	6.8	33		2680	60	810	631	USGS
J. Indart Irrigation Well	12S/14E-29B1	7-3-57	--	1090	7.0	52 / 2.59	34 / 2.77	114 / 4.96	4.6 / 0.12	0 / 0.00	96 / 1.57	151 / 3.14	202 / 5.70	1.0 / 0.02	0.0 / 0.00	0.21	40		646	48	268	189	USGS
Locke Bros. Irrigation Well	13S/15E-18L1	7-3-57	--	502	8.1	2.0 / 0.10	0.1 / 0.01	108 / 4.70	2.4 / 0.06	0 / 0.00	134 / 2.20	51 / 1.06	55 / 1.55	0.2 / 0.00	0.8 / 0.04	0.46	53		336	97	6	0	USGS
Pappas & Co. Irrigation Well	14S/13E-12N1	8-1-57	83	1280	--			259 / 11.27					88 / 2.48			1.2				88	78		USGS
Employee's Enterprise Irrigation Well	14S/13E-21N1	7-31-57	88	2150	--			330 / 14.36					120 / 3.38			3.3				63	424		USGS
Employee's Enterprise Irrigation Well	14S/13E-22N1	7-31-57	89	1890	--			334 / 14.53					108 / 3.05			2.2				74	250		USGS
Pilliboe Bros. Irrigation Well	14S/13E-25N1	7-31-57	89	1960	--			366 / 15.92					45 / 1.27			1.9				80	198		USGS
Pappas & Co. Irrigation Well	14S/14E-9M1	8-1-57	82	1850	--			342 / 14.88					152 / 4.29			1.5				76	236		USGS
Vista Del Llano Irr. and Dom. Well	14S/14E-11N1	7-31-57	--	4080	--			568 / 24.71					525 / 14.80			2.1				52	1150		USGS
Jack Scanes Irrigation Well	14S/14E-12N1	7-31-57	80	2110	--			413 / 17.97					228 / 6.43			1.5				86	146		USGS
William Giacone Irrigation Well	14S/14E-17Q1	8-1-57	78	2240	--			285 / 12.40					190 / 5.36			2.0				51	592		USGS
Murietta Farms Irrigation Well	14S/14E-28E1	8-1-57	77	2050	--			161 / 7.00					115 / 3.24			2.1				35	664		USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M					FRESNO COUNTY - WESTSIDE AREA (5-22e) (Cont.)																	
L. A. and J. W. Jones Irrigation Well	14S/15E-31N1	7-31-57	73	6780				1070 / 46.54					925 / 26.08			2.2				56	1810		USGS
Employee's Enterprise Irrigation Well	15S/12E-1N1	7-31-57	81	3300				610 / 26.54					200 / 5.64			3.4				74	464		USGS
Employee's Enterprise Irrigation Well	15S/13E-5R1	7-31-57	91	1380				230 / 10.00					52 / 1.47			1.9				70	220		USGS
Muriatta Farms Irrigation Well	15S/14E-4D1	8-1-57	80	1570				153 / 6.66					58 / 1.64			1.9				47	376		USGS
F. A. Yearout Irrigation Well	15S/14E-36Q2	7-31-57	87	1530				281 / 12.22					72 / 2.03			2.0				82	136		USGS
Pucheu Irrigation Well	15S/15E-20N2	7-31-57	81	1310				238 / 10.35					55 / 1.55			1.4				76	160		USGS
Reece Bros. Irrigation Well	15S/15E-25N1	7-31-57	73	2180				216 / 9.40					104 / 2.93			1.3				39	804		USGS
Reece Bros. Irrigation Well	15S/15E-27N1	7-31-57	73	1680				118 / 5.13					60 / 1.69			0.70				26	730		USGS
Reece Bros. Irrigation Well	15S/15E-35N1	7-31-57	75	1750				128 / 5.57					58 / 1.64			0.88				27	766		USGS
Irrigation Well	15S/16E-7Q1	8-1-57	70	2020				342 / 14.88					130 / 3.67			0.86				72	288		USGS
William Deal Irrigation Well	16S/14E-10Q1	7-31-57	87	1610				227 / 9.87					40 / 1.13			1.9				58	360		USGS
F. A. Yearout Irrigation Well	16S/15E-8N1	7-31-57	80	1440				161 / 7.00					55 / 1.55			1.2				45	424		USGS
Irrigation Well	16S/15E-24N2	7-31-57	82	1090				171 / 7.44					30 / 0.85			1.8				67	184		USGS
Vista Del Llano Irrigation Well	16S/15E-25Q1	8-1-57	78	1740				175 / 7.61					72 / 2.03			1.3				39	604		USGS
Cragnani Bros. Irrigation Well	16S/16E-6N1	7-31-57	74	1730				181 / 7.87					59 / 1.66			1.3				40	586		USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	MDB&M					FRESNO COUNTY - WESTSIDE AREA (5-22e) (Cont.)																	
Rabb Bros. Irrigation Well	16S/16E-9N1	7-31-57	74	1500	—			200 / 8.70					62 / 1.75			1.3				56	350		USGS
Vieta Del Llano Irrigation Well	16S/16E-20N1	7-31-57	73	1940	—			121 / 5.26					50 / 1.41			0.68				22	930		USGS
Vieta Del Llano Irrigation Well	17S/16E-18E1	7-31-57	88	1380	—			250 / 10.88					88 / 2.48			1.8				77	164		USGS
Harnish Bros. Irrigation Well	17S/16E-24N1	7-31-57	77	1530	—			185 / 8.05					54 / 1.52			1.2				50	396		USGS
H. W. Deavenport Irrigation Well	17S/17E-23Q1	7-31-57	76	1210	—			167 / 7.26					41 / 1.16			0.72				59	254		USGS
H. W. Deavenport Irrigation Well	17S/17E-27R1	7-31-57	75	1280	—			167 / 7.26					49 / 1.38			0.68				56	288		USGS
Irrigation Well	18S/16E-24N1	7-30-57	95	2930	8.0	118 / 5.89	2.6 / 0.21	481 / 20.92	5.0 / 0.13	0 / 0.00	61 / 1.00	240 / 5.00	775 / 21.86	0.2 / 0.00	0.3 / 0.02	1.4			1680	77	305	255	USGS
F. C. Diener Irrigation Well	18S/17E-13Q1	7-30-57	84	1030	—			177 / 7.70					39 / 1.10			0.98				76	122		USGS
Benson Irrigation Well	18S/17E-30P1	7-30-57	91	2310	—			422 / 18.36					532 / 15.00			1.3				87	132		USGS
Calflax Irrigation Well	18S/17E-33N1	7-30-57	84	2490	—			373 / 16.23					470 / 13.25			1.2				67	408		USGS
Giffen Inc. Irrigation Well	19S/17E-13N1	7-30-57	81	1340	—			144 / 6.26					52 / 1.47			0.71				44	406		USGS
Giffen Inc. Irrigation Well	19S/17E-34N1	7-30-57	79	1580	—			154 / 6.70					60 / 1.69			0.81				38	548		USGS
Boston Land Co. Irrigation Well	19S/18E-23D2	7-30-57	88	1600	--			312 / 13.57					305 / 8.60			1.6				88	94		USGS
H. I. Black Irrigation Well	19S/19E-30B2	7-30-57	82	1200	—			230 / 10.00					110 / 3.10			2.8				84	94		USGS
Allen Irrigation Well	20S/15E-25D2	7-30-57	72	2250	—			250 / 10.88					158 / 4.46			0.60				42	748		USGS
Irrigation Well	20S/15E-26M1	7-30-57	70	2270	—			250 / 10.88					145 / 4.09			1.3				42	750		USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M					FRESNO COUNTY - WESTSIDE AREA (5-22e) (Cont.)																	
Shell Oil Co. Industrial Well	20S/16E-4P2	7-30-57	78	3080	7.9	160 / 7.98	205 / 16.82	291 / 12.66	5.6 / 0.14	0 / 0.00	145 / 2.38	1400 / 29.15	205 / 5.78	11 / 0.18	0.2 / 0.01	1.1	25		2370	34	1240	1120	USGS
Giffen Inc. Irrigation Well	20S/17E-9R1	7-30-57	73	2580	—			250 / 10.88					122 / 3.44			0.89				34	1040		USGS
Paul Kucher Ranch Irrigation Well	20S/17E-11N1	7-30-57	79	1350	8.0	68 / 3.39	56 / 4.61	154 / 6.70	3.8 / 0.10	0 / 0.00	164 / 2.69	518 / 10.78	48 / 1.35	2.1 / 0.03	0.2 / 0.01	0.76	31		963	45	400	266	USGS
Vernon Thomas Ranch Dom. and Irr. Well	20S/17E-36D1	7-30-57	77	1250	—			137 / 5.96					32 / 0.90			0.52				44	372		USGS
Boston Land Co. Irrigation Well	20S/18E-24D1	7-30-57	91	1840	—			360 / 15.66					380 / 10.72			1.4				89	92		USGS

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (No)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	MDB&M					FRESNO COUNTY - RAISIN CITY OIL FIELD AREA (5-22e)																	
Edmund Juste Irrigation Well	15S/17E-1H1	8-5-57	73	594	--.			33 / 1.44					79 / 2.23			0.00				27	196		USGS
James Irrigation Dist. Irrigation Well	15S/17E-10R1	8-5-57	72	2150	—			208 / 9.05					610 / 17.10			0.05				47	520		USGS
Signal Oil Co. Domestic Well	15S/17E-11P1	8-5-57	77	570	—			110 / 4.78					114 / 3.21			0.07				89	30		USGS
Irrigation Well	15S/17E-12J1	8-6-57	70	600	7.3	52 / 2.59	16 / 1.35	38 / 1.65	8.4 / 0.21	0 / 0.00	186 / 3.05	24 / 0.50	76 / 2.14	10 / 0.16	0.0 / 0.00	0.07	76		392	28	197	61	USGS
Dunlap & Graham Dom. and Ind. Well	15S/17E-13G1	8-6-57	102	62,800	6.4	1890 / 94.31	732 / 60.21	13,900 / 604.65	350 / 8.95	0 / 0.00	217 / 3.56	0.0 / 0.00	27,400 / 772.68	1.2 / 0.02	0.0 / 0.00	4.2	59		44,400	79	7730	7550	USGS
Seaboard Oil Co. Domestic Well	15S/17E-13R1	8-6-57	70	304	—			53 / 2.31					24 / 0.68			0.00				75	38		USGS
Seaboard Oil Co. Ind. and Dom. Well	15S/17E-14G1	8-6-57	62	413	7.5	3.4 / 0.17	0.8 / 0.07	80 / 3.48	3.5 / 0.09	0 / 0.00	128 / 2.10	4.2 / 0.09	60 / 1.69	1.0 / 0.02	0.2 / 0.01	0.04	66		282	91	12	0	USGS
Signal Oil Co. Domestic Well	15S/17E-15B1	8-5-57	72	587	7.4	36 / 1.80	8.0 / 0.66	68 / 2.96	6.7 / 0.17	0 / 0.00	139 / 2.28	22 / 0.46	100 / 2.82	2.1 / 0.03	0.0 / 0.00	0.00	68		379	53	123	9	USGS
Nobel Irrigation Well	15S/17E-15F1	8-5-57	72	731	7.5	13 / 0.65	2.1 / 0.17	137 / 5.96	5.2 / 0.13	0 / 0.00	171 / 2.80	31 / 0.65	128 / 3.61	0.6 / 0.01	0.3 / 0.02	0.57	67		469	86	41	0	USGS
James Irrigation Dist. Irrigation Well	15S/17E-22R1	8-5-57	70	680	7.4	29 / 1.45	2.8 / 0.23	111 / 4.83	14 / 0.36	0 / 0.00	179 / 2.93	23 / 0.48	116 / 3.27	0.9 / 0.01	0.2 / 0.01	0.10	59		444	70	84	0	USGS
James Irrigation Dist. Irrigation Well	15S/17E-27H2	8-5-57	73	497	--			103 / 4.48					61 / 1.72			0.46				91	22		USGS
James Irrigation Dist. Irrigation Well	15S/17E-34A1	8-6-57	72	477	—			100 / 4.35					55 / 1.55			0.46				93	17		USGS
Jamee Irrigation Dist. Irrigation Well	15S/17E-34J1	8-6-57	70	390	7.8	4.8 / 0.24	0.7 / 0.06	80 / 3.48	3.2 / 0.08	0 / 0.00	143 / 2.34	12 / 0.25	46 / 1.30	0.00 / 0.00	0.5 / 0.03	0.27	64		281	90	15	0	USGS
James Irrigation Dist. Irrigation Well	15S/18E-16G1	8-6-57	74	333	7.3	22 / 1.10	6.1 / 0.50	36 / 1.57	7.1 / 0.18	0 / 0.00	137 / 2.25	6.9 / 0.14	27 / 0.76	7.7 / 0.12	0.1 / 0.01	0.00	75		255	47	80	0	USGS
James Irrigation Dist. Irrigation Well	15S/18E-20G1	8-6-57	72	385	7.5	20 / 1.00	3.4 / 0.28	54 / 2.35	7.6 / 0.19	0 / 0.00	139 / 2.28	6.7 / 0.14	42 / 1.18	4.7 / 0.08	0.2 / 0.01	0.03	71		278	62	64	0	USGS
James Irrigation Dist. Irrigation Well	15S/18E-20N1	8-6-57	72	295	--			59 / 2.57					28 / 0.79			0.00				87	18		USGS

o. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M								KERN COUNTY (5-22f)														
Richard Calciano Irrigation Well	11N/19W-8R1	7-23-57	--	461	7.8	30 / 1.50	17 / 1.38	37 / 1.61	5.1 / 0.13	0 / 0.00	160 / 2.62	57 / 1.19	21 / 0.59	16 / 0.26	0.4 / 0.02	0.28	25		288	35	144	13	USGS
Walker O. Fry Irrigation Well	11N/20W-8R1	7-23-57	--	1490	7.4	140 / 6.99	43 / 3.57	131 / 5.70	8.8 / 0.23	0 / 0.00	157 / 2.57	564 / 11.74	93 / 2.62	8.3 / 0.13	0.4 / 0.02	0.69	33		1100	35	528	399	USGS
R. A. Hildebrand Irrigation Well	12N/19W-33R1	7-22-57	--	353	7.8	26 / 1.30	8.5 / 0.70	36 / 1.57	3.6 / 0.09	0 / 0.00	168 / 2.75	30 / 0.62	8.1 / 0.23	3.1 / 0.05	0.2 / 0.01	0.84	19		218	43	100	0	USGS
Parks Bros. Irrigation Well	12N/21W-31R1	7-23-57	--	1270	7.8	148 / 7.39	46 / 3.81	107 / 4.65	11 / 0.23	0 / 0.00	129 / 2.11	624 / 12.99	2.20 / 0.06	6.8 / 0.11	1.2 / 0.06	0.40	25		1060	29	560	454	USGS
Parks Bros. Irrigation Well	12N/21W-33N1	7-23-57	--	1460	7.5	144 / 7.19	47 / 3.85	116 / 5.05	11 / 0.28	0 / 0.00	108 / 1.77	629 / 13.10	27 / 0.76	9.1 / 0.15	1.0 / 0.05	0.55	26		1060	31	552	463	USGS
Maricopa Farms Irrigation Well	12N/22W-35R1	8-2-57	--	1550	7.7	127 / 6.34	33 / 2.73	166 / 7.22	6.8 / 0.17	0 / 0.00	106 / 1.74	658 / 13.70	42 / 1.18	2.5 / 0.04	1.3 / 0.07	0.68	56		1150	44	454	367	DWR
	MDB&M																						
G. Fiarini Irrigation Well	25S/24E-27R1	7-31-57	--	449	7.9	46 / 2.30	0.2 / 0.02	45 / 1.96	0.9 / 0.02	0 / 0.00	68 / 1.11	108 / 2.25	26 / 0.73	14 / 0.23	0.0 / 0.00	0.04	49		322	46	116	60	USGS
Mid-State Horticulture Irrigation Well	25S/26E-1R1	6-6-57	77	292	7.1	14 / 0.70	17 / 0.14	48 / 2.09	3.6 / 0.09	0 / 0.00	102 / 1.67	31 / 0.65	18 / 0.50	8.6 / 0.14	0.4 / 0.02	0.02	0.9		192	69	42	0	USGS
M. Caratan Irrigation Well	25S/26E-16J1	7-31-57	--	325	7.9	15 / 0.75	1.1 / 0.09	53 / 2.31	2.3 / 0.06	0 / 0.00	108 / 1.77	40 / 0.83	20 / 0.56	8.4 / 0.14	0.0 / 0.00	0.09	47		240	72	42	0	USGS
Robert Heitzeg Irrigation Well	26S/24E-3R1	7-31-57	--	186	9.0	5.6 / 0.28	0.0 / 0.00	36 / 1.57	0.6 / 0.02	8 / 0.27	48 / 0.79	27 / 0.56	7.2 / 0.20	2.8 / 0.05	0.0 / 0.00	0.01	25		136	84	14	0	USGS
Nelson G. Smith Stock Well	26S/27E-9Q1	6-4-57	81	1630	7.3	166 / 8.28	51 / 4.22	109 / 4.74	6.4 / 0.16	0 / 0.00	150 / 2.46	480 / 9.99	202 / 5.50	0.1 / 0.00	0.2 / 0.01	0.13	73		1160	27	625	502	USGS
Robert Neumand Stock Well	27S/23E-27J1	7-31-57	--	222	9.2	2.6 / 0.13	0.0 / 0.00	45 / 1.96	0.6 / 0.02	27 / 0.90	12 / 0.20	13 / 0.27	24 / 0.68	0.0 / 0.00	0.2 / 0.01	0.00	21		139	93	6	0	USGS
Barling Bros. Irrigation Well	27S/24E-5R1	7-31-57	--	144	8.8	4.2 / 0.21	0.0 / 0.00	29 / 1.26	0.9 / 0.02	15 / 0.50	30 / 0.49	13 / 0.27	4.5 / 0.13	1.7 / 0.03	0.2 / 0.01	0.01	19		104	85	8	0	USGS
Obie Hawkins Irrigation Well	27S/24E-31E1	7-31-57	--	303	8.5	13 / 0.65	1.3 / 0.11	47 / 2.04	0.7 / 0.02	14 / 0.47	13 / 0.21	46 / 0.86	38 / 1.07	2.0 / 0.03	0.2 / 0.01	0.11	21		189	72	38	4	USGS

a Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M					KERN COUNTY (5-22f) (Cont.)																	
Kern County Land Co. Irrigation Well	27S/25E-5R1	7-31-57	--	287	7.9	30 / 1.50	4.1 / 0.34	27 / 1.17	2.1 / 0.05	0 / 0.00	124 / 2.03	19 / 0.40	11 / 0.31	20 / 0.32	0.0 / 0.00	0.00	23		197	38	92	0	USGS
Charles West Irrigation Well	27S/26E-27R1	7-29-57	--	350	7.5	38 / 1.90	5.6 / 0.46	25 / 1.09	2.6 / 0.07	0 / 0.00	122 / 2.00	24 / 0.50	33 / 0.93	7.3 / 0.12	0.2 / 0.01	0.06	29		225	31	118	18	USGS
Mrs. Ethel West Irrigation Well	27S/27E-29J1	6-4-57	71	1560	7.5	140 / 6.99	23 / 1.91	149 / 6.48	5.4 / 0.14	0 / 0.00	234 / 3.84	119 / 2.48	332 / 9.36	4.0 / 0.06	0.2 / 0.01	0.58	37		925	42	445	253	USGS
Houchin Dom. and Irr. Well	28S/22E-36N1	7-26-57	--	637	8.4	41 / 2.05	0.4 / 0.03	107 / 4.65	1.4 / 0.04	7 / 0.23	207 / 3.39	96 / 2.00	38 / 1.07	0.6 / 0.01	0.1 / 0.01	0.45	20		414	69	104	0	USGS
Crawford Irrigation Well	28S/23E-25P1	7-26-57	--	282	8.9	8.8 / 0.44	0.0 / 0.00	51 / 2.22	0.6 / 0.02	8 / 0.27	39 / 0.64	43 / 0.90	30 / 0.85	3.2 / 0.05	0.2 / 0.01	0.20	23		187	83	22	0	USGS
W. Issac Dom. and Irr. Well	28S/25E-17L1	7-26-57	--	184	8.2	9.6 / 0.48	0.0 / 0.00	34 / 1.48	1.0 / 0.03	0 / 0.00	88 / 1.44	15 / 0.31	7.0 / 0.20	2.1 / 0.03	0.2 / 0.01	0.00	21		133	74	24	0	USGS
S. A. Camp Irrigation Well	28S/26E-11A1	7-29-57	--	316	7.9	10 / 0.50	0.7 / 0.06	53 / 2.31	1.2 / 0.03	0 / 0.00	65 / 1.07	17 / 0.35	49 / 1.38	0.9 / 0.01	0.00 / 0.00	0.06	17		181	80	28	0	USGS
Kern County Land Co. Irrigation Well	28S/26E-30A1	7-29-57	--	862	8.0	115 / 5.74	3.2 / 0.26	57 / 2.48	2.9 / 0.07	0 / 0.00	77 / 1.26	227 / 4.73	79 / 2.23	11 / 0.18	0.2 / 0.01	0.21	23		557	29	300	237	USGS
Tracy Ranch Domestic Well	29S/24E-4D1	7-26-57	--	321	8.4	15 / 0.75	0.1 / 0.01	51 / 2.22	0.8 / 0.02	2 / 0.07	40 / 0.66	83 / 1.73	18 / 0.51	1.8 / 0.03	0.1 / 0.01	0.14	15		207	74	38	2	USGS
W. Hale Irrigation Well	29S/25E-3M1	7-26-57	--	335	7.9	30 / 1.50	2.7 / 0.22	36 / 1.57	1.3 / 0.03	0 / 0.00	91 / 1.49	40 / 0.83	29 / 0.82	3.4 / 0.05	0.1 / 0.01	0.19	21		209	47	86	11	USGS
R. Curtis Irrigation Well	29S/25E-10N1	7-26-57	--	324	7.9	34 / 1.70	1.2 / 0.10	29 / 1.26	1.5 / 0.04	0 / 0.00	82 / 1.34	36 / 0.75	35 / 0.99	0.4 / 0.01	0.2 / 0.01	0.19	21		198	41	90	23	USGS
Kern County Land Co. Dom. and Stk. Well	30S/27E-21D1	7-25-57	--	399	7.9	44 / 2.20	8.3 / 0.68	28 / 1.22	2.2 / 0.06	0 / 0.00	170 / 2.79	33 / 0.69	20 / 0.56	6.8 / 0.11	0.1 / 0.01	0.22	30		257	29	144	5	USGS
Jack Rossi Irrigation Well	30S/27E-31R1	7-31-57	--	426	7.9	47 / 2.35	6.9 / 0.57	34 / 1.48	1.8 / 0.05	0 / 0.00	195 / 3.20	35 / 0.73	14 / 0.39	6.9 / 0.11	0.2 / 0.01	0.15	28		270	33	146	0	DWR
Carlos Rey Irrigation Well	31S/24E-28B1	7-25-57	--	5310	7.9	521 / 26.00	112 / 9.20	763 / 33.19	17 / 0.43	0 / 0.00	95 / 1.56	2110 / 43.93	840 / 23.69	11 / 0.18	0.1 / 0.01	4.1	54		4480	48	1760	1680	USGS
E. Yaksitch Irrigation Well	31S/29E-17E1	7-22-57	--	623	8.1	60 / 2.99	13 / 1.05	53 / 2.31	4.4 / 0.11	0 / 0.00	212 / 3.47	73 / 1.52	37 / 1.04	20 / 0.32	0.2 / 0.01	0.36	29		394	36	202	28	USGS

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M					KERN COUNTY (5-22f) (Cont.)																	
Los Angeles Athletic Club Irrigation Well	32S/27E-6D1	7-25-57	--	390	7.9	10 0.50	5.1 0.42	73 3.18	1.2 0.03	0 0.00	130 2.13	68 1.42	11 0.31	0.0 0.00	2.4 0.13	0.46	30		265	77	46	0	USGS
Kern County Land Co. Domestic Well	32S/27E-16R1	7-25-57	--	900	8.0	63 3.14	29 2.42	91 3.96	3.8 0.10	0 0.00	267 4.38	216 4.50	25 0.70	0.0 0.00	0.8 0.04	0.53	54		615	41	278	59	USGS
C. B. Dickey Irrigation Well	32S/29E-11R1	7-23-57	--	2140	7.3	152 7.58	7.5 0.62	273 11.88	10 0.26	0 0.00	157 2.57	124 2.58	530 14.95	8.7 0.14	0.4 0.02	1.3	24		1210	58	410	281	USGS
C. B. Dickey Irrigation Well	32S/29E-16R1	7-22-57	--	618	7.5	39 1.95	22 1.77	55 2.39	4.6 0.12	0 0.00	229 3.75	55 1.15	40 1.13	25 0.40	0.0 0.00	0.29	26		380	38	186	0	USGS

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER
1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[a]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	MDB&M					KERN COUNTY - DEVILS DEN OIL FIELD AREA (5-22f)																	
K. K. Ranch Irrigation Well	25S/18E-2N2	8-7-57	70	4470	7.2	154 / 7.68	257 / 21.12	625 / 27.19	7.0 / 0.18	0 / 0.00	371 / 6.08	1880 / 39.14	380 / 10.72	17 / 0.27	0.6 / 0.03	5.6	41		3550	48	1440	1140	USGS
K. K. Ranch Irrigation Well	25S/18E-3D1	8-7-57	74	1590	7.5	60 / 2.99	88 / 7.23	169 / 7.35	2.0 / 0.05	0 / 0.00	281 / 4.61	470 / 9.79	90 / 2.54	11 / 0.18	0.4 / 0.02	1.8	47		1080	42	511	281	USGS
K. K. Ranch Irrigation Well	25S/18E-3E1	8-7-57	74	1680	--			175 / 7.61					104 / 2.93			1.9				40	560		USGS
K. K. Ranch Domestic Well	25S/19E-6D1	8-7-57	76	2820	7.3	100 / 4.99	136 / 11.21	346 / 15.05	5.2 / 0.13	0 / 0.00	194 / 3.18	989 / 20.59	249 / 7.02	35 / 0.56	0.7 / 0.04	3.0	48		2010	48	810	651	USGS
K. K. Ranch Irrigation Well	25S/19E-6D2	8-7-57	80	3860	7.4	151 / 7.53	122 / 10.07	527 / 22.92	21 / 0.54	0 / 0.00	261 / 4.28	1290 / 26.86	407 / 11.48	4.7 / 0.08	0.3 / 0.02	2.3	74		2730	56	880	666	USGS
K. K. Ranch Irrigation Well	25S/19E-6N1	8-7-57	78	3330	7.7	133 / 6.64	177 / 14.56	382 / 16.62	15 / 0.38	0 / 0.00	258 / 4.23	1250 / 26.02	296 / 8.35	20 / 0.32	0.3 / 0.02	2.5	68		2470	44	1060	848	USGS
K. K. Ranch Irrigation Well	25S/19E-6P1	8-7-57	82	3600	7.4	149 / 7.44	158 / 12.96	418 / 18.18	20 / 0.51	0 / 0.00	245 / 4.02	1270 / 26.44	336 / 9.48	13 / 0.21	0.3 / 0.02	2.4	74		2560	47	1020	819	USGS
K. K. Ranch Irrigation Well	25S/19E-7M1	8-7-57	78	5300	--			826 / 35.93					486 / 13.70			9.3				55	1460		USGS
K. K. Ranch Irrigation Well	25S/19E-7P1	8-7-57	78	5160	--			789 / 34.32					404 / 11.39			9.7				53	1520		USGS

a Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	SBR&M					LOWER MOJAVE RIVER VALLEY (6-40)																	
Union Pacific Railroad Municipal and Industrial well	9N/1E-1M1	7-9-57	--	450	7.8					0 0.00	189 3.10		28 0.80								113		DWR
California Electric Power Co. Irrigation well	9N/1E-14M1	5-27-57	--	855	7.3	62 3.10	18 1.48	87 3.78	3.1 0.08	0 0.00	250 4.10	112 2.33	63 1.77	9.0 0.15	0.0 0.00	0.30	20		566	45	229	24	TERM
California Electric Power Co. Irrigation well	9N/1E-15K1	5-28-57	--	755	7.4	55 2.75	13 1.07	82 3.57	31 0.08	0 0.00	232 3.80	91 1.90	55 1.55	7.5 0.12	0.7 0.04	0.12	20		520	48	191	1	TERM
Gray Phelps Domestic well	9N/1E-15N1	7-9-57	--	505	7.5	32 1.60	5 0.40	68 2.95	1.2 0.03	0 0.00	168 2.75	55 1.15	39 1.10	7.5 0.12	0.3 0.02	0.38			312	59	100		DWR
Thomas Ellsworth Domestic well	9N/4E-30R1	10-28-57	--	694	8.0	34 1.72	6 0.48	120 5.22	1.0 0.03	7 0.24	155 2.55	107 2.24	88 2.42	1.0 0.02	2.0 0.10	1.10			498	70	110		SBCFCD
Dr. Rooe Domestic well	9N/1W-4G1	7-10-57	--	1145	7.5	100 5.00	24 2.00	106 4.61	3.9 0.10	0 0.00	290 4.75	191 3.98	114 3.21	1.9 0.03	0.7 0.04	0.25	28		810	39	350	112	TERM
		10-23-57	70	792	7.7	95 4.74	15 1.23	95 4.13	3.1 0.08	0 0.00	270 4.42	169 3.53	84 2.37	1.5 0.02	0.4 0.02	0.20	20		615	41	299	78	DWR
Southern California Water Co. Municipal well	9N/1W-5J2	7-9-57	80	1672	8.2	61 3.03	12 0.95	265 11.50	3.9 0.10	0 0.00	224 3.66	316 6.58	191 0.19	12 0.19	2.7 0.14	2.9	20		1060	74	199	16	TERM
J. B. Price Domestic well	9N/1W-9G1	7-10-57	--	1030	7.4	74 3.70	18 1.47	118 5.13	3.1 0.08	0 0.00	351 5.75	123 2.56	78 2.20	0.0 0.00	0.8 0.04	1.64	32		710	49	258		TERM
		10-23-57	70	877	7.8	89 4.44	17 1.40	132 5.74	2.8 0.07	0 0.00	379 6.22	154 3.20	80 2.26	1.0 0.02	1.2 0.06	2.10	25		671	49	292		DWR
		12-5-57	--	1050	7.8	83 4.12	18 1.46	123 5.35	2.7 0.07	0 0.00	378 6.19	121 2.52	73 2.06	0.5 0.01	1.2 0.06	1.80			652	49	280		SBCFCD
Robert Hattick Domestic-Irrigation and stock well	9N/1W-10D1 M91-A	7-9-57	--	552	8.0	44 2.20	7 0.60	65 2.82	1.6 0.04	0 0.00	204 3.35	65 1.35	34 0.95	5.3 0.08	0.5 0.02	0.27			335	50	140		DWR
		12-5-57	--	801	8.0	66 3.30	14 1.16	88 3.83	2.6 0.67	0 0.00	263 4.31	124 2.59	55 1.55	0.0 0.00	0.5	0.14			495	46	223	7	SBCFCD

a Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratoriee Inc., (TERM), San Bernardino County Flood Control District (SBCFCD), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M					LOWER MOJAVE RIVER VALLEY (6-40) (Cont.)																	
Southern California Water Co. Municipal well	9N/2W-1F1	12-5-57	--	642	7.6	50 2.49	10 0.86	69 3.00	1.6 0.41	0 0.00	206 3.37	71 1.47	46 1.30	1.5 0.02	0.8 0.04	0.26			385	47	168		SBCFCD
Southern California Water Co. Municipal well	9N/2W-1F2	12-5-57	--	615	8.4	46 2.27	10 0.86	72 3.13	2.0 0.05	9 0.31	170 2.78	94 1.95	42 1.18	2.0 0.03	0.8 0.04	0.24			388	50	157	18	SBCFCD
Yermo Inspection Station Domestic well	10N/2E-31R1	7-9-57	--	483	7.9					0 0.00	177 2.90		30 0.85								98		DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), San Bernardino County Flood Control District (SBCFCD), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivolents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M					COACHELLA VALLEY-LOWER COACHELLA AREA (7-21)																	
Lester Roberson Domestic well	5S/7E-16K1	3-28-57	—	440	7.9					0 0.00	162 2.65		20 0.56								148	15	TERM
		9-19-57	—	313	8.2	41 2.05	5 0.45	21 0.91	4.2 0.11	0 0.00	156 2.55	35 0.73	11 0.30	0.3 0.01	0.3 0.02	0.0			214	26	125		DWR
Z. E. Zalady Domestic well	5S/7E-22K1	3-28-57	71	730	7.7					0 0.00	165 2.70		60 1.69								280	145	TERM
		9-18-57	—	773	8.0					0 0.00	173 2.83		61 1.72								309	167	TERM
Joe N. Ramirez & Sons Domestic and Irrigation well	5S/7E-33C1	3-28-57	—	830	7.7	96 4.80	11 0.90	54 2.35	5.9 0.15	0 0.00	183 3.00	146 3.04	55 1.55	41 0.66	0.5 0.03	0.0	17		550	29	285	135	TERM
		10-7-57	—	1106	8.0	132 6.60	12 0.95	71 3.10	6.2 0.16	0 0.00	191 3.13	218 4.53	80 2.25	63 1.01	0.1 0.01	0.0	17		770	29	378	221	TERM
Mitchell Land and Improvement Co. Domestic well	5S/8E-31D1	3-27-57	—	600	7.3	68 3.40	7 0.57	40 1.74	5.9 0.15	0 0.00	151 2.48	86 1.79	45 1.27	11 0.18	0.8 0.04	0.0	19		396	30	199	75	TERM
		9-18-57	—	462	8.2	58 2.90	5 0.45	31 1.34	4.4 0.11	0 0.00	143 2.35	67 1.39	39 1.10	8.4 0.14	0.2 0.01	0.0			309	28	168	50	DWR
E. M. Holm Domestic well	5S/8E-33N1	3-27-57	—	660	8.0					0 0.00	145 2.37		33 0.93								90		TERM
		9-19-57	—	639	8.1					0 0.00	145 2.37		31 0.87								85		TERM
Gifford Phillips Domestic well	6S/7E-25E1	3-27-57	—	400	7.6	28 1.40	3 0.25	47 2.04	3.1 0.08	0 0.00	108 1.77	50 1.04	35 0.99	1.7 0.03	0.8 0.04	0.03	17		260	54	83		TERM
		9-18-57	—	435	8.4					2 0.05	104 1.70		39 1.10								100	12	DWR
M. R. Shepard Domestic well	6S/8E-7P1	3-27-57	—	570	7.7					0 0.00	131 2.15		53 1.49								170	62	TERM
		9-18-57	—	444	8.3	58 2.90	3 0.25	31 1.33	3.0 0.08	0 0.00	131 2.15	64 1.34	39 1.10	3.1 0.05	0.0 0.00	0.01			297	29	158	50	DWR
E. H. McCain Domestic and Irrigation well	6S/8E-10A3	3-27-57	—	550	7.7	25 1.25	2 0.16	76 3.30	2.0 0.05	0 0.00	110 1.80	70 1.45	45 1.27	0.0 0.00	2.0 0.10	0.0	19		300	69	71		TERM
		9-19-57	—	5018	8.1	24 1.20	12 0.12	76 3.31	2.3 0.06	0 0.00	103 1.69	70 1.46	46 1.30	0.0 0.00	1.3 0.07	0.25	16		306	71	66		TERM

a Determined by addition of constituents.
b Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivolents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M					COACHELLA VALLEY-LOWER COACHELLA AREA (7-21) (Cont.)																	
W. C. and Joe E. Stroube Domestic well	6S/8E-27H1	3-27-57	--	265	8.2					0 / 0.00	90 / 1.48		13 / 0.37								40		TERM
		9-19-57	--	238	8.5					0 / 0.00	83 / 1.36		14 / 0.39								36		TERM
		12-16-57	--	203	8.1					0 / 0.00	83 / 1.36		15 / 0.42								36		DWR
Nazernig Karahadian Domestic and Irrigation well	6S/9E-30C1	3-27-57	--	282	8.2					0 / 0.00	92 / 1.50		15 / 0.42								25		TERM
		9-19-57	--	253	8.7	9 / 0.45	1 / 0.05	51 / 2.22	1.1 / 0.03	6 / 0.20	76 / 1.25	41 / 0.86	7 / 0.20	0.0 / 0.00	2.2 / 0.12	0.0			153	81	25		DWR
Vessey Brothers Domestic well	7S/8E-22M1	3-27-57	86	1200	7.1	77 / 3.85	7 / 0.57	186 / 8.09	4.7 / 0.12	0 / 0.00	34 / 0.55	112 / 2.33	345 / 9.72	4.5 / 0.07	0.4 / 0.02	0.02	19		760	64	221	193	TERM
		9-18-57	--	1600	8.6	108 / 5.40	4 / 0.35	211 / 9.19	4.8 / 0.12	1.8 / 0.06	24 / 0.39	165 / 3.43	390 / 11.00	8.7 / 0.14	0.0 / 0.00	0.0			1037	61	288	265	DWR
C. Charlee Crockett Domestic and Irrigation well	7S/9E-16K1	3-29-57	--	795	8.1	10 / 0.50	2 / 0.16	164 / 7.13	2 / 0.05	0 / 0.00	151 / 2.48	182 / 3.79	35 / 0.99	0.0 / 0.00	10 / 0.50	0.30	17		536	91	33		TERM
		9-19-57	--	1318	8.3	25 / 1.23	7 / 0.57	260 / 11.30	2.7 / 0.07	8.4 / 0.28	252 / 4.13	271 / 5.64	94 / 2.65	1.5 / 0.24	0.14 / 0.07	0.0	13		918	86	90		TERM

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by[c]
	SB&M					EAST COASTAL PLAIN PRESSURE AREA(8-1.01)																	
Mrs. Olive Mason Domestic and Irrigation well	5S/11W-21M3 577F	9-11-57	77	363	7.9					0 0.00	156 2.56		11 0.21										OCDA
Anderson Mutual Water Co. Domestic well	5S/11W-21N2	6-12-57	--	535	7.9	46 2.30	10 0.82	47 2.04	2 0.50	0 0.00	196 3.22	63 1.31	23 0.65	0.0 0.00	0.4 0.02	0.20	17		362	39	156		TERM
		9-12-57	--	521	8.1					0 0.00	183 3.00		17 0.48										OCDA
Harvey C. Fulton Domestic well	5S/11W-25R2 C-990-O	5-22-57	--	678	7.7	84 4.20	15 1.25	30 1.30	1 0.30	0 0.00	273 4.47	60 1.24	43 1.21			0.20			426	19	273	49	OCDA
		9-26-57	--	726	7.5					0 0.00	289 4.74		39 1.10										OCDA
Oscar Strickland Domestic and	5S/11W-26F4	6-11-57	--	1255	7.7	131 6.55	18 1.50	95 4.13	1 0.30	0 0.00	219 3.59	138 2.87	200 5.64			0.25			728	34	403	223	OCDA
		9-25-57	77	1473	7.6	198 9.90	33 2.75	30 1.30	3 0.08	0 0.00	211 3.46	124 2.50	282 7.95	5.8 0.90	0.3 0.02	0.15			192	9	633	460	OCDA
Southern California Municipal well	5S/11W-26M1 599-D C-998H	9-26-57	77	3128	7.5					0 0.00	296 4.85		680 19.18										OCDA
W. S. Tubach Domestic well	5S/11W-27H4	9-25-57	--	2364	7.6					0 0.00	265 4.34		494 13.93										OCDA
Sunset Land and Water Co. Municipal well	5S/11W-29C1	7-3-57	--	480	8.2					9.6 0.32	142 2.32		14 0.39						172				OCDA
		10-2-57	--	329	8.6					5 0.17	142 2.32		11 0.31										OCDA
Signal Oil & Gas Co. Industrial well	5S/11W-34F3	9-26-57	--	656	8.6					11 0.37	348 5.70		17 0.48										OCDA
Joseph J. Coureges Domestic well	5S/11W-36B2 11429-D C-999X	4-5-57	--	565	7.8	56 2.80	13 1.07	34 1.48	2.7 0.07	0 0.00	223 3.65	47 0.98	33 0.93	0.0 0.00	0.7 0.04	0.08	19		390	27	194	11	TERM
		9-18-57	--	495	8.0					0 0.00	198 3.25		18 0.51										OCDA
Ivan Harper Irrigation and Domestic well	5S/11W-36P1 13211-D C-1257X	4-5-57	--	1490	7.6	163 8.15	38 3.11	81 3.52	5.9 0.15	0 0.00	233 3.82	124 2.58	293 8.25	14 0.23	0.2 0.01	0.08	19		940	24	563	372	TERM

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S.Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), Orange County Department of Agriculture Laboratory, (OCDA), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Co)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	SBB&M					EAST COASTAL PLAIN PRESSURE AREA (8-1.01) (Cont.)																	
Ivan Harper Irrigation and	5S/11W-36P1 13211-D C-1257X	5-15-57	--	1016	7.8	113 / 5.65	16.8 / 1.40	90 / 3.91	3 / 0.10	0 / 0.00	204 / 3.34	34 / 0.71	234 / 6.60	11 / 0.18		0.25			676	35	353	186	OCDA
		9-17-57	--	1117	7.9					0 / 0.00	196 / 3.21		88 / 2.48										OCDA
I. W. Hellman Ranch Domestic-stock and Irrigation well	5S/12W-12C1 514-A C-910T	6-13-57	--	323	8.6					11 / 0.37	110 / 1.80		11 / 0.31										OCDA
		9-24-57	--	313	8.6					16 / 0.53	107 / 1.75		10 / 0.23										OCDA
H. J. Lamb Domestic well	6S/10W-6L2 13231 C-1257	3-8-57	--	4335	7.4	538 / 26.92	52 / 4.33	246 / 10.65	8 / 0.21	0 / 0.00	197 / 3.22	17 / 0.35	1372 / 38.69	9.0 / 0.15		0.37			2986	25	1563	1402	OCDA
		9-19-57	--	6353	7.3	724 / 36.20	128 / 10.66	360 / 15.65	6 / 0.15	0 / 0.00	277 / 4.54	8 / 0.17	2074 / 58.49	5.8 / 0.09	0.1 / 0.01	0.01			4022	25	2343	2116	OCDA
Albam Holtz Domestic well	6S/10W-7G1 13233H C-1266V	3-8-57	--	2320	7.1	266 / 13.29	29 / 2.39	123 / 5.65	7 / 0.18	0 / 0.00	11 / 0.18	12 / 0.25	725 / 20.50	9.0 / 0.15		0.20			1410	26	784	775	OCDA
		5-23-57	--	6000	7.2	688 / 34.40	158 / 12.95	316 / 13.74	10.2 / 0.26	0 / 0.00	196 / 3.22	0.0 / 0.00	2000 / 56.34	0.0 / 0.00	0.0 / 0.00	0.10	17		3860	22	2368	2207	TERM
		9-17-57	--	5979	6.4	768 / 38.40	146 / 12.17	300 / 13.04	14 / 0.36	0 / 0.00	12 / 0.20	10 / 0.21	2169 / 61.17	1.2 / 0.02	0.1 / 0.01	0.01			4107	20	2528	2518	OCDA
City of Newport Beach Municipal well	6S/10W-8D9 13242-F C-1262A	3-26-57	69	522	8.0	54 / 2.70	7 / 0.60	43 / 1.88	1.7 / 0.04	0 / 0.00	204 / 3.35	13 / 0.28	60 / 1.69	2.5 / 0.04	0.2 / 0.01	0.06			277	36	165		DWR
		7-29-57	--	889	7.7	88 / 4.40	19 / 1.54	65 / 2.83	1 / 0.03	0 / 0.00	176 / 2.89	23 / 0.48	177 / 4.99		0.05	0.08			553	32	297	152	OCDA
		12-13-57	66	1447	7.4	132 / 6.60	31 / 2.55	77 / 3.36	4.3 / 0.11	0 / 0.00	190 / 9.80	0.0 / 0.00	348 / 9.80	0.0 / 0.00	0.01 / 0.01	0.07	36		782	27	458	302	TERM
Huntington Beach Golf Course Irrigation and Domestic well	6S/11W-3R2	10-1-57	--	1016	8.2	36 / 1.80	11 / 0.92	171 / 7.43	3 / 0.08	0 / 0.00	318 / 5.21	2 / 0.42	154 / 4.34	1.4 / 0.02	0.3	0.10			602	73	136		OCDA
F. E. Farnsworth Irrigation well	6S/11W-12F3 13223F C-1260K	3-10-57	--	6750	5.8	834 / 41.60	123 / 10.10	324 / 14.10	7.2 / 0.18	0 / 0.00	6 / 0.10	173 / 3.61	2198 / 62.00	9.9 / 0.16	0.3 / 0.02	0.10			5230	21	2585	2580	DWR
Surfland Oil Co. Observation well	6S/11W-12Q1 1260-P	3-27-57	71	22680	3.3	440 / 22.00	561 / 45.98	3289 / 143.00	132.9 / 3.40	0 / 0.00	0.0 / 0.00	937 / 19.52	7028 / 197.96	32 / 0.52	0.10 / 0.01	0.80			15600	65	3399	3399	TERM

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), Orange County Department of Agriculture Laboratory, (OCDA), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CoCO_3$: Total ppm	Hardness as $CoCO_3$: N.C ppm	Analyzed by [c]
	SBB&M					CHINO BASIN (8-2.01)																	
Fontana Union Water Co. Domestic and Irrigation well	1S/5W-7N1 D-1062a 17352	7-19-57	--	357	7.5	56 / 2.78	6 / 0.51	21 / 0.91	1.9 / 0.05	0 / 0.00	191 / 3.13	15 / 0.32	13 / 0.37	17.5 / 0.28	0.2 / 0.01	0.0			261	21	165	8	SBCFCD
		12-31-57	--	348	8.2					0 / 0.00	183 / 3.00		6 / 0.17								160	10	TERM
S. and S. Ranch Domestic and Irrigation Well	1S/6W-29R1 D-1029b	5-23-57	--	369	8.5	48 / 2.37	5 / 0.41	22 / 0.96	1.7 / 0.04	7 / 0.24	161 / 2.65	5 / 0.11	24 / 0.68	12 / 0.19	0.2 / 0.07				214	25	139		SBCFCD
		12-31-57	--	429	8.1					0 / 0.00	195 / 3.20		24 / 0.68						165				TERM
Peach Park Water Co. Irrigation and Domestic well	1S/7W-28R1 D-1005a 17685b	3-8-57	--	390	7.5					0 / 0.00	183 / 3.00		18 / 0.51								155	5	TERM
		5-23-57	--	344	8.5	44 / 2.21	11 / 0.87	15 / 0.65	0.9 / 0.02	12 / 0.41	156 / 2.56	13 / 0.26	14 / 0.40	10 / 0.16	0.6 / 0.03	0.08			224	17	154	5	SBCFCD
		11-25-57	--	326	8.0	45 / 2.23	11 / 0.91	15 / 0.65	1.1 / 0.03	0 / 0.00	182 / 2.98	15 / 0.31	15 / 0.42	12.5 / 0.20	0.3 / 0.02	0.0			239	17	157	8	SBCFCD
		12-31-57	--	375	8.0					0 / 0.00	180 / 2.95		15 / 0.42								158	10	TERM
Wilder and Camel Irrigation and Domestic well	1S/7W-34M1 D-1007a 17685	5-23-57	--	430	7.6	54 / 2.70	13 / 1.03	18 / 0.78	1.2 / 0.31	0 / 0.00	208 / 3.42	12 / 0.25	17 / 0.48	22 / 0.36	0.4 / 0.02	0.08			242	17	187	16	SBCFCD
		12-31-57	--	441	8.1	49 / 2.43	12 / 0.97	18 / 0.78	1.6 / 0.04	0 / 0.00	204 / 3.35	11 / 0.22	20 / 0.56	1.5 / 0.02	0.4 / 0.02	0.0	16		318	19	170	3	TERM
P. J. Crevolin Domestic and Irrigation well	2S/7W-10M1 D-911 17698	3-18-57	--	520	7.9					0 / 0.00	198 / 3.25		30 / 0.85								202	39	TERM
		6-10-57	--	456	8.3	60 / 2.98	16 / 1.30	20 / 0.87	1.0 / 0.03	0 / 0.00	203 / 3.34	23 / 0.47	26 / 0.73	23 / 0.37	0.6 / 0.03	0.0			320	17	214	47	SBCFCD
		12-31-57	--	517	8.2	53 / 2.62	18 / 1.48	19 / 0.83	1.5 / 0.04	0 / 0.00	204 / 3.35	26 / 0.54	30 / 0.85	1.8 / 0.03	0.9 / 0.05	0.0	16		355	17	205	42	TERM
Pietro and Domenico Enrico Domestic well	2S/7W-15A1 D-910c 17709A	6-10-57	--	363	8.3	45 / 2.23	10 / 0.83	18 / 0.78	1.4 / 0.04	10 / 0.33	174 / 2.85	18 / 0.37	8 / 0.23	5.5 / 0.09	0.5 / 0.03	0.0			230	20	153		SBCFCD
		12- 57	--	620	7.9	58 / 2.90	27 / 2.25	25 / 1.08	2.7 / 0.07	0 / 0.00	290 / 4.75	22 / 0.46	25 / 0.70	11.8 / 0.19	0.4 / 0.02	0.0	44		462	17	258	20	TERM

o Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), San Bernardino County Flood Control District (SBCFCD), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by [c]
	SBB&M								CHINO BASIN (8-2.01) (Cont.)														
C. T. Merril Domestic and Irrigation well	2S/7W-21L1 D-904b	6-10-57	--	751	8.3	89 / 4.46	30 / 2.46	32 / 1.39	1.8 / 0.05	10 / 0.33	320 / 5.25	43 / 0.90	32 / 0.90	62 / 1.00	0.3 / 0.02	0.0			497	17	346	67	SBCFCD
		12-31-57	--	767	7.9					0 / 0.00	315 / 5.16		31 / 0.87								320	62	TERM
A. Omlin Domestic well	2S/7W-23E1 D-916 16801	6-10-57	--	716	7.8	75 / 3.72	35 / 2.87	28 / 1.22	1.8 / 0.05	0 / 0.00	278 / 4.56	50 / 1.03	46 / 1.30	23.5 / 0.38	0.4 / 0.02	0.0			530	16	330	102	SBCFCD
		12-31-57	--	705	7.2	77 / 3.85	26 / 2.15	24 / 1.03	1.2 / 0.03	0 / 0.00	314 / 5.14	42 / 0.87	33 / 0.93	25 / 0.40	0.0 / 0.00	0.0	50		542	14	300	43	TERM
Luginbill & Imbeach Domestic well	2S/7W-27A1 D-909d	6-10-57	--	1000	7.7	118 / 5.88	36 / 2.99	48 / 2.09	1.8 / 0.05	0 / 0.00	446 / 7.33	61 / 1.27	56 / 1.58	35 / 0.56	0.4 / 0.02	0.0			650	19	444	77	SBCFCD
		12-3-57	--	921	7.7					0 / 0.00	514 / 8.42		52 / 1.47								511	90	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), San Bernardino County Flood Control District (SBCFCD), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C ppm	Analyzed by [c]
	SBB&M					BUNKER HILL BASIN (8-2.06)																	
Norton Air Force Base Domestic well	1S/3W-8M1	2-15-57	--	483	7.5	71 / 3.54	15 / 1.23	19 / 0.83	4 / 0.10	0 / 0.00	251 / 4.11	25 / 0.53	29 / 0.82	14.5 / 0.23	0.5 / 0.03	1.0	20		365	15	238	32	DWR
		9-24-57	--	707	7.5	100 / 5.00	19 / 1.55	22 / 0.96	3.9 / 0.10	0 / 0.00	326 / 5.35	38 / 0.80	39 / 1.1	20.2 / 0.32	0.3 / 0.02	0.53			453	13	328	60	DWR
Tri-City Rock Co. Industrial well	1S/3W-9E2	2-15-57	--	227	7.3	27 / 1.35	5 / 0.41	16 / 0.70	3 / 0.77	0 / 0.00	124 / 2.04	13 / 0.27	8 / 0.23	2.5 / 0.04	0.7 / 0.04	0.10	30		160	18	88		DWR
		9-25-57	67	268	7.3	32 / 1.60	5 / 0.40	16 / 0.68	2.6 / 0.07	0 / 0.00	131 / 2.15	16 / 0.33	7 / 0.2	3.7 / 0.06	0.3 / 0.02	0.06			183	25	100		DWR
		12-4-57	--	267	7.5	31 / 1.55	5 / 0.45	15 / 0.65	2.9 / 0.07	0 / 0.00	134 / 2.20	12 / 0.26	11 / 0.30	1.9 / 0.03	0.1 / 0.01	0.20	28		167	24	100		DWR
Cook Orchards Irrigation Well	1S/3W-16A1 2663 E-113	9-25-57	66	284	7.1	33 / 1.65	6 / 0.50	15 / 0.65	2 / 0.52	0 / 0.00	116 / 1.90	28 / 0.58	12 / 0.35	2.4 / 0.04	0.6 / 0.03	0.06			184	23	108	13	DWR
Mesbur Realty Co. Domestic well	1S/4W-13F3 18041-G 466	2-15-57	--	392	7.8	60 / 2.99	9 / 0.74	20 / 0.87	3.8 / 0.10	0 / 0.00	220 / 3.60	24 / 0.51	17 / 0.48	6 / 0.10	0.7 / 0.04	0.86	20		270	18	187	7	DWR
Gage Canal Co. Irrigation well	1S/4W-13G1 46-1	6-26-57	--	303	8.0	50 / 2.50	4 / 0.33	12 / 0.52	2.5 / 0.06	0 / 0.00	163 / 2.68	13 / 0.28	12 / 0.34	0.0 / 0.00	0.5 / 0.03	0.24	20		195	15	142	8	DWR
		7-5-57	--	317	7.7	44 / 2.20	10 / 0.82	14 / 0.61	2 / 0.05	0 / 0.00	159 / 2.60	34 / 0.71	11 / 0.31	6 / 0.10	0.5 / 0.03	0.22			209	17	151	21	SBCFCD
		9-25-57	62	327	7.5	48 / 2.40	7 / 0.60	11 / 0.49	2.3 / 0.06	0 / 0.00	165 / 2.70	20 / 0.41	11 / 0.30	4.2 / 0.07	0.0 / 0.00	0.03			206	14	150	15	DWR
Gage Canal Co. Irrigation and Domestic well	1S/4W-13L1 467	12-4-57	--	312	8.0	38 / 1.90	8.9 / 0.73	12 / 0.52	1.7 / 0.04	0 / 0.00	146 / 2.39	20 / 0.42	8 / 0.23	8.7 / 0.14	0.4 / 0.02	0.0	20		195	16	132	12	DWR
Delman Water Co. Domestic well	1N/4W-29E3 E-4c	3-11-57	--	655	7.3	90 / 4.49	23 / 1.89	15 / 0.65	4 / 0.10	0 / 0.00	248 / 4.06	108 / 2.25	13 / 0.37	20.2 / 0.33	0.4 / 0.02	0.03	25		382	9	319	116	DWR
		9-25-57	--	695	7.2	107 / 5.35	19 / 1.55	12 / 0.54	3.4 / 0.09	0 / 0.00	244 / 4.00	142 / 2.95	11 / 0.30	19 / 0.30	0.0 / 0.00	0.08			475	7	345	145	DWR
Delman Water Co. Municipal well	1N/4W-29F1	3-11-57	--	603	7.6	83 / 4.14	20 / 1.64	14 / 0.61	4 / 0.10	0 / 0.00	235 / 3.86	88 / 1.84	11 / 0.31	18.8 / 0.30	0.4 / 0.02	0.0	30		400	9	289	96	DWR
		9-25-57	--	558	7.5	82 / 4.10	17 / 1.40	11 / 0.50	3.5 / 0.09	0 / 0.00	244 / 4.00	79 / 1.64	7 / 0.20	15.9 / 0.26	0.6 / 0.03	0.0			386	8	275	75	DWR

a. Determined by addition of constituents
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), San Bernardino County Flood Control District (SBCFCD), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	SBB&M								SAN LUIS REY VALLEY (9-7)														
George Nagata Irrigation and Domestic well	11S/4W-4N1	6-24-57	—	1156	7.6	85 / 4.25	35 / 2.90	97 / 4.20	6.2 / 0.16	0 / 0.00	306 / 5.02	84 / 1.75	154 / 4.34	12.6 / 0.20	0.75 / 0.04	0.05	22		795	36	358	107	TERM
		10-22-57	—	1127	7.5	88 / 4.39	36 / 2.96	90 / 3.92	5.3 / 0.14	0 / 0.00	314 / 5.14	85 / 1.77	152 / 4.29	21.5 / 0.35	0.4 / 0.02	0.13	25		615	34	368	111	DWR
Mrs. K. Johnson Irrigation and Domestic well	11S/4W-5K1	6-24-57	—	930	8.0					0 / 0.00	235 / 3.85		152 / 4.29								275	82	DWR
		10-22-57	—	778	7.5	56 / 2.79	23 / 1.89	68 / 2.96	4.3 / 0.11	0 / 0.00	242 / 3.96	49 / 1.02	97 / 2.74	0.0 / 0.00	0.3 / 0.02	0.08	20		420	38	234	36	DWR
Stokes Brothers Irrigation well	11S/4W-5R1	6-24-57	—	1057	7.6	76 / 3.80	30 / 2.50	95 / 4.15	5.7 / 0.15	0 / 0.00	282 / 4.63	80 / 1.66	156 / 4.40	7.3 / 0.12	0.1 / 0.01	0.05	16		730	39	315	83	TERM
J.S. Alvarado Irrigation and Domestic well	11S/4W-8H1	10-21-57	—	3096	7.8	215 / 10.73	91 / 7.48	310 / 13.49	9 / 0.23	0 / 0.00	356 / 5.84	365 / 7.60	685 / 19.32	0.6 / 0.01	0.4 / 0.02	0.12	20		2099	42	911	619	DWR
Academy of the Little Flower Irrigation and Domestic well	11S/4W-8J1	6-24-57	—	2488	7.5	150 / 7.50	63 / 5.20	267 / 11.60	8.4 / 0.22	0 / 0.00	340 / 5.57	201 / 4.19	513 / 14.46	16.8 / 0.27	0.2 / 0.01	0.15	19		1730	47	635	357	TERM
		10-21-57	—	2551	7.4	165 / 8.23	65 / 5.34	273 / 11.88	5.3 / 0.14	0 / 0.00	323 / 5.29	206 / 4.30	572 / 16.13	23.6 / 0.38	0.3 / 0.02	0.21	30		1557	46	679	414	DWR
Clarence Nishizu Domestic and Irrigation well	11S/4W-8N1	10-21-57	—	2915	7.6	206 / 10.28	90 / 7.40	273 / 11.88	2.5 / 0.06	0 / 0.00	328 / 5.37	207 / 4.32	695 / 19.60	1 / 0.02	0.4 / 0.02	0.23	20		2072	40	884	616	DWR
L. O. Ivy Domestic well	11S/4W-8R2	10-21-57	--	1381	7.3	100 / 4.99	38 / 3.12	134 / 5.83	5.1 / 0.13	0 / 0.00	183 / 3.00	336 / 6.99	160 / 4.51	0.0 / 0.00	0.4 / 0.02	0.19	10		862	41	407	257	DWR
S. Davies Irrigation and Domestic	11S/4W-18C1	10-22-57	--	1406	7.3	101 / 5.04	38 / 3.12	131 / 5.70	6.1 / 0.16	0 / 0.00	289 / 4.74	123 / 2.56	249 / 7.02	0.0 / 0.00	0.3 / 0.02	0.17	20		825	41	408	171	DWR
Earl D. Amsler Domestic and Irrigation	11S/5W-13L1	3-28-57	--	1690	7.7	110 / 5.50	46 / 3.77	159 / 6.91	7 / 0.18	0 / 0.00	317 / 5.20	229 / 4.77	238 / 6.70	0.0 / 0.00	0.3 / 0.02	0.12	24		1100	42	464	204	TERM
		10-21-57	—	1623	7.7	120 / 5.99	45 / 3.70	155 / 6.74	6.4 / 0.16	0 / 0.00	328 / 5.37	197 / 4.10	262 / 7.39	0.7 / 0.01	0.4 / 0.02	0.21	25		990	41	485	216	DWR
		12-19-57	—	1600	7.8	120 / 5.99	44 / 3.62	153 / 6.66	6.9 / 0.18	0 / 0.00	311 / 5.10	194 / 4.04	250 / 7.05	0.0 / 0.00	0.3 / 0.02	0.10	30		999	40	481	226	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by c
	88B&M					SAN LUIS REY VALLEY (9-7) (Cont.)																	
City of Oceanside Municipal well	11S/5W-13Q1	10-21-57	--	1866	7.5	156 / 7.78	58 / 4.77	141 / 6.12	7.4 / 0.19	0 / 0.00	293 / 4.80	168 / 3.49	368 / 10.38	0.0 / 0.00	0.3 / 0.02	0.13	25		1215	32	628	386	DWR
Walter Johnson Industrial well	11S/5W-23E1	3-28-57	--	31500	7.7	540 / 27.00	622 / 50.98	5382 / 234.00	156.4 / 4.00	0 / 0.00	357 / 5.85	1272 / 26.50	10030 / 282.54	0.0 / 0.00	0.4 / 0.02	1.32	20		20360	74	3899	3606	TERM
		6-25-57	--	26234	7.0	420 / 21.00	628 / 51.50	4719 / 205.00	129 / 3.30	0 / 0.00	341 / 5.59	1149 / 23.94	8875 / 250.28	0.0 / 0.00	0.0	1.38	19		16850	73	3625	3345	TERM
		10-21-57	68	21230	7.1	447 / 22.31	559 / 45.95	3810 / 165.7	90 / 2.30	0 / 0.00	335 / 5.49	998 / 20.78	7700 / 214.14	11.1 / 0.18	0.0 / 0.00	0.82	25		14697	70	3413	3138	DWR

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M					EL CAJON VALLEY (9-16)																	
R. G. Alexander Domestic and Irrigation well	15S/1E-31R1	7-9-57	—	1285	7.7	66 / 3.30	38 / 3.10	139 / 6.05	2.2 / 0.06	0 / 0.00	195 / 3.20	130 / 2.71	199 / 5.6	80.6 / 1.30	0.5 / 0.02	0.0			822	48	320	160	DWR
		10-22-57	—	1330	7.4					0 / 0.00	200 / 3.28		205 / 5.77								334	170	TERM
G. G. Snyder Domestic and Irrigation well	15S/1W-34R3	7-10-57	—	1880	7.2	120 / 6.00	70 / 5.75	193 / 8.40	3.3 / 0.09	0 / 0.00	153 / 2.50	191 / 3.98	466 / 13.15	64.4 / 1.04	0.1 / 0.01	0.0			1376	42	588	463	DWR
Rhodes Domestic well	16S/1W-1H4	7-10-57	—	1651	8.0					0 / 0.00	281 / 4.60		196 / 5.52								553	323	TERM
		10-29-57	—	1500	7.2	113 / 5.66	70 / 5.74	127 / 5.52	2.2 / 0.06	0 / 0.00	281 / 4.60	237 / 4.93	195 / 5.49	87 / 1.41	0.1 / 0.01	0.3	28		1320	33	570	340	TERM
Bob Gilb Domestic and Irrigation well	16S/1W-2K6	7-10-57	—	1845	7.0					0 / 0.00	262 / 4.30		376 / 10.60								515	300	DWR
		10-22-57	—	1980	7.4	109 / 5.46	49 / 4.04	190 / 8.24	4.3 / 0.11	0 / 0.00	295 / 4.83	91 / 1.89	390 / 10.99	19.5 / 0.31	0.0 / 0.00	0.0	32		1485	46	475	233	TERM
Ed. Fletcher Co. Municipal well	16S/1W-3E1 #3	7-10-57	—	1388	7.5	56 / 2.82	35 / 2.93	147 / 6.40	7 / 0.17	0 / 0.00	172 / 2.82	55 / 1.15	312 / 8.79	0.0 / 0.00	0.2 / 0.01	0.20	23		958	52	288	147	TERM
		10-22-57	—	1430	7.9					0 / 0.00	170 / 2.78		331 / 9.32								318	179	TERM
Ed. Fletcher Co. Municipal well	16S/1W-3N1	7-10-57	—	1452	7.5	71 / 3.53	41 / 3.37	140 / 6.10	7 / 0.18	0 / 0.00	155 / 2.55	52 / 1.08	335 / 9.44	12.1 / 0.20	0.11 / 0.01	0.05	26		790	46	345	217	TERM
		10-22-57	78	1422	7.7					0 / 0.00	184 / 3.02		313 / 8.82								352	201	TERM
E. S. Clark Domestic and Irrigation well	16S/1W-3Q1	7-10-57	—	2660	5.5					0 / 0.00	333 / 5.45		599 / 16.9								730	457	DWR
Ed. Fletcher Co. Municipal well	16S/1W-10D1 #2	7-9-57	—	1300	7.4	57 / 2.85	27 / 2.20	161 / 6.98	4.9 / 0.13	0 / 0.00	168 / 2.75	46 / 0.95	294 / 8.3	13.8 / 0.22	0.0 / 0.00	0.23			768	57	253	115	DWR
		10-22-57	77	1470	7.9					0 / 0.00	171 / 2.80		304 / 8.56								257	117	TERM

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M					EL CAJON VALLEY (9-16) (Cont.)																	
Ed. Fletcher Co. Municipal well	16S/1W-10E2 #2	7-9-57	--	1679	7.9	44 / 2.22	14 / 1.13	216 / 9.40	7.4 / 0.19	0 / 0.00	128 / 2.10	62 / 1.29	350 / 9.86	0.0 / 0.00	0.3 / 0.02	0.70	20		793	73	168	63	TERM
		10-22-57	75	1755	7.5	43 / 2.14	9.7 / 0.80	281 / 12.20	2.3 / 0.06	0 / 0.00	57 / 0.93	62 / 1.29	461 / 12.99	0.0 / 0.00	0.3 / 0.02	0.4	6.6		965	80	147	100	TERM
J. M. Conaway Irrigation well	16S/1W-11P4	7-9-57	--	3770	8.0	194 / 9.68	120 / 9.88	370 / 16.10	15 / 0.38	0 / 0.00	329 / 5.40	194 / 4.04	890 / 25.07	85.5 / 1.38	0.2 / 0.02	0.0	32		1650	45	978	708	TERM
		10-22-57	--	3630	7.4					0 / 0.00	339 / 5.56		878 / 24.73								994	716	TERM
Bud Robinson Domestic well	16S/1W-12J4	7-10-57	71	1708	7.2	98 / 4.89	70 / 5.71	118 / 5.13	6 / 0.16	0 / 0.00	182 / 2.98	79 / 1.64	362 / 10.20	46 / 0.74	0.0 / 0.00	0.0	32		920	32	530	381	TERM
		10-22-57	--	1700	7.5					0 / 0.00	184 / 3.02		390 / 10.99								557	406	TERM
R. S. Embleton Domestic well	16S/1W-15K2	7-10-57	--	2737	7.5	73 / 3.66	63 / 5.20	405 / 17.60	13 / 0.34	0 / 0.00	527 / 8.63	203 / 4.23	505 / 14.23	27.8 / 0.45	0.2 / 0.01	0.0	35		1792	66	443	11	TERM
		10-22-57	--	2720	7.4	72 / 3.58	67 / 5.54	432 / 18.80	1.9 / 0.05	0 / 0.00	525 / 8.60	198 / 4.12	495 / 13.94	17 / 0.28	0.2 / 0.01	0.7	63		1595	63	456	26	TERM

a Determined by addition of constituents.
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1957

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm[b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by[c]
	SBB&M					TIA JUANA BASIN (9-19)																	
California Water and Telephone Co. Test well	18S/2W-32H1	10-23-57	70	4245	7.7	178 / 8.90	111 / 9.10	681 / 29.6	11 / 0.28	0 / 0.00	692 / 11.34	381 / 7.93	980 / 27.61	0.6 / 0.01	0.5 / 0.03	0.6	15		3395	62	900	333	TERM
State of California Dept. of Veterane Affaire Irrigation well	18S/2W-32P2 157	7-11-57	68	4757	7.4	190 / 9.52	130 / 10.68	584 / 25.40	20 / 0.52	0 / 0.00	424 / 6.95	286 / 5.95	1225 / 34.51	0.0 / 0.00	0.4 / 0.02	0.40	17		3290	55	1010	662	TERM
		12-3-57	--	4850	7.5	172 / 8.60	143 / 11.80	607 / 26.40	13 / 0.34	0 / 0.00	445 / 7.30	295 / 6.14	1230 / 34.65	0.0 / 0.00	0.3 / 0.02	0.40	23		2910	56	1020	655	TERM
California Water and Telephone Co. Test well	18S/2W-32P4 1947A	7-11-57	72	13320	6.2	242 / 12.08	353 / 29.04	2093 / 91.00	78 / 2.00	0 / 0.00	6 / 0.10	375 / 7.81	4600 / 129.6	0.0 / 0.00	0.0 / 0.00	0.25			8125	68	2056	2051	TERM
		10-23-57	70	13970	8.0	236 / 11.80	359 / 29.54	2116 / 92.00	87 / 2.24	0 / 0.00	23 / 0.38	359 / 7.47	4670 / 131.7	0.0 / 0.00	0.0 / 0.00	0.1	1.8		11180	68	2067	2048	TERM
Jamee Jackson Irrigation well	18S/2W-33K4 123D	7-11-57	68	3640	7.2					0 / 0.00	464 / 7.60		691 / 19.5								950	570	DWR
Henry Schaffner Irrigation well	18S/2W-35L1 20B	7-10-57	70	4930	7.3					0 / 0.00	561 / 9.20		1262 / 35.6								1230	743	DWR
		10-22-57	68	5060	7.7					0 / 0.00	531 / 8.70		1278 / 36.00								1144	709	TERM
San Yeidro Irrigation Dietrict Municipal well	19S/2W-1E8	7-10-57	70	3842	7.8	195 / 9.74	85 / 6.96	474 / 20.60	16 / 0.42	0 / 0.00	430 / 7.05	284 / 5.91	891 / 25.10	0.0 / 0.00	0.3 / 0.02	0.70	17		2205	55	835	482	TERM
		10-22-57	68	4480	7.5	254 / 12.70	113 / 9.26	616 / 26.80	9.4 / 0.24	0 / 0.00	483 / 7.92	350 / 7.29	1224 / 34.51	0.0 / 0.00	0.2 / 0.01	0.5	17		3584	55	1098	702	TERM
Grey Irrigation well	19S/2W-2E1 31D	7-11-57	69	3730	7.4					0 / 0.00	357 / 5.85		862 / 24.3								880	587	DWR
Aballo and Wright Stock and Irrigation well	19S/2W-3A1 31C	7-11-57	71	4270	7.5					0 / 0.00	445 / 7.30		975 / 27.5								1030	665	DWR
California Water and Telephone Co. Municipal well	19S/2W-4A5	7-11-57	68	2290	7.5					0 / 0.00	366 / 6.00		406 / 11.45								620	320	DWR
		10-22-57	68	2450	7.5					0 / 0.00	367 / 6.02		443 / 12.48								646	345	TERM

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Mangonese (Mn), Zinc (Zn), and Chromium (Cr).

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micromhos at 25° C)	pH	Mineral constituents in parts per million / equivalents per million: Calcium (Co)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO_3)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Fluoride (F)	Boron (B)	Silica (SiO_2)	Other constituents[d]	Total dissolved solids in ppm [b]	Percent sodium	Hardness as $CaCO_3$: Total ppm	Hardness as $CaCO_3$: N.C. ppm	Analyzed by [c]
	SBB&M					TIA JUANA BASIN (9-19) (Cont.)																	
California Water and Telephone Co. Municipal well	19S/2W-4A5 11C-5	12-18-57	68	2033	7.5	137 / 6.84	55 / 4.52	264 / 11.48	3.5 / 0.09	0 / 0.00	364 / 5.96	244 / 5.08	416 / 11.73	1.0 / 0.02	0.5 / 0.03	0.32	30		1420	50	568	270	DWR
California Water and Telephone Co. Test well	19S/2W-5C6 1947C	7-11-57	72	14271	6.7	507 / 25.30	385 / 31.70	1909 / 83.00	117 / 3	0 / 0.00	24 / 0.40	545 / 11.35	4789 / 134.90	0.0 / 0.00	0.1 / 0.01	0.65			8150	58	2850	2830	TERM
		10-23-57	77	11780	7.1	488 / 24.40	351 / 28.86	1803 / 78.40	42 / 1.08	0 / 0.00	37 / 0.60	371 / 7.72	4430 / 124.93	0.0 / 0.00	0.03	0.3	2.7		9425	59	2663	2633	TERM
Knox Dairy Farm Irrigation well	19S/2W-5G1 145G	7-10-57	70	6910	7.2					0 / 0.00	531 / 8.70		1886 / 53.20								1395	760	DWR
California Water and Telephone Co. Test well	19S/2W-5L2 1947D	7-11-57	76	7136	7.0	271 / 13.48	154 / 12.72	966 / 42.00	55 / 1.40	0 / 0.00	338 / 5.53	499 / 10.39	1980 / 55.77	0.0 / 0.00	0.3 / 0.02	0.80	18		4348	60	1310	1033	TERM
		10-23-57	71	7020	7.3	187 / 9.37	156 / 12.80	1067 / 46.40	14 / 0.36	0 / 0.00	244 / 4.00	432 / 8.99	1984 / 55.94	0.0 / 0.00	0.2 / 0.01	0.5	13		4540	67	1108	908	TERM

a Determined by addition of constituents
b. Gravimetric determination.
c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratories Inc., (TERM), or State Department of Water Resources (D.W.R.), as indicated
d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).